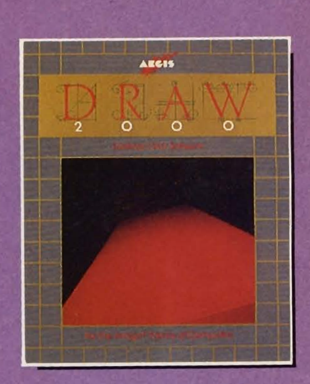
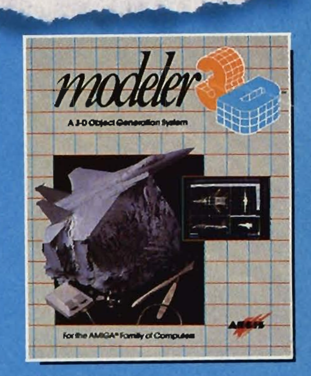


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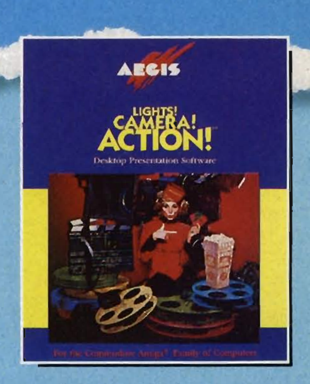
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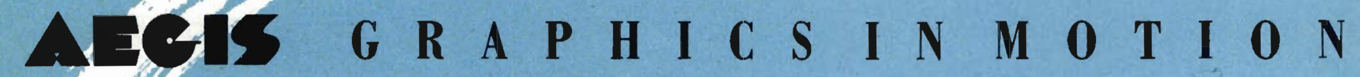


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VIEW FROM THE BRIDGE

In your letters, you've made dozens of different requests regarding what you'd like to see from *Ahoy!'s AmigaUser.* But the request that's come up most often is for a disk of our outstanding type-in programs. As you can see from the ad on the facing page, that request has been granted.

Before we get cracking on the other 37 or so, allow us to fill you in on the contents of the February *Ahoy!'s AmigaUser:*

- Those of you who were (or who remain) readers of *Ahoy!*, our C-64/128 publication, know James C. Hilty as one of the most prolific game programmers in that magazine's five-year history. And now that he's moved on to the Amiga, you'll reap the benefits of his experience in these pages. This month James reveals his method for producing commercial quality, *Flicker-Free BOBs in Amiga BASIC.* (Turn to page 60.)
- Morton Kevelson provides you with a wide-angle view of the Amiga video digitizer market in this issue, after having just surveyed the field in August—but don't expect him to do it every six months. The way things are changing weekly in this exciting quadrant of the Amiga universe, we may have to update you more often than that! For now, the very latest information can be found in *From See to Shining CRT.* (Turn to page 52.)
- What good will the Amiga's sound, graphics, and multitasking capabilities do you when you zap the disk containing the program you've slaved over for three months? Richard Herring supplies some preventative *Security Measures* in this month's *Eye on CLI.* (Turn to page 37.)
- New contributor Nancy J. Freeman's credentials include chairing graphics seminars at the last two AmiEXPOs and art directing a popular Amiga disk magazine. In this issue, she turns her expert eye toward the latest releases of interest to Amiga artists, both amateur and professional. (Turn to page 49.)

Readers who buy *Ahoy!'s AmigaUser* at the newsstand call us every day to ask why they can't find the *Ahoy!* Access Club *Clipper* in their magazine. As we explain in the ad on pages 42 and 43, the *Clipper* is included free of charge with subscriber copies only. We don't mean to play favorites—we appreciate your buying our magazine, however you choose to do it. We're simply doing everything in our power to make subscribing to *Ahoy!'s AmigaUser* irresistible, even to those rich folks who don't care about saving over 41% off the newsstand price (see the card bound between pages 50 and 51)!

We've enjoyed every minute we've spent putting this issue together for you. Please write or call to tell us if our efforts were worthwhile. *—David Allikas*

AVAILABLE AT LAST!



The *Ahoy!'s AmigaUser* Program Disk, Volume I contains all the type-in programs from the May 1988 through January 1989 issues of *Ahoy!'s AmigaUser*, including the following:

• *AmigaUserTerm*—Amiga BASIC terminal software with many of the features of commercial programs

• *Matrix Pattern*—an area fill pattern creator that allows you to output to data statements

• *ABM*—defend three missile bases and six cities against a full-scale alien attack

• *Mailbox*—a speedy name and address management and label printing system

• *Shade Select*—a color control and comparison program that lets you display any 10 of the Amiga's 4096 colors onscreen at one time

Plus routines from *Amiga Toolbox*, and a sampling of the best of Amiga public domain software, including *Amoeba Invaders* (arcade action); *Dmouse* (mouse pointer animator); *DropShadow V. 2.0* (window enhancer); *Purty* (printer utility); and *ViewBoot* and *VirusX V. 2.0* (virus prevention, detection, and cure programs).

...and other surprises!

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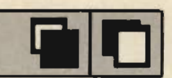
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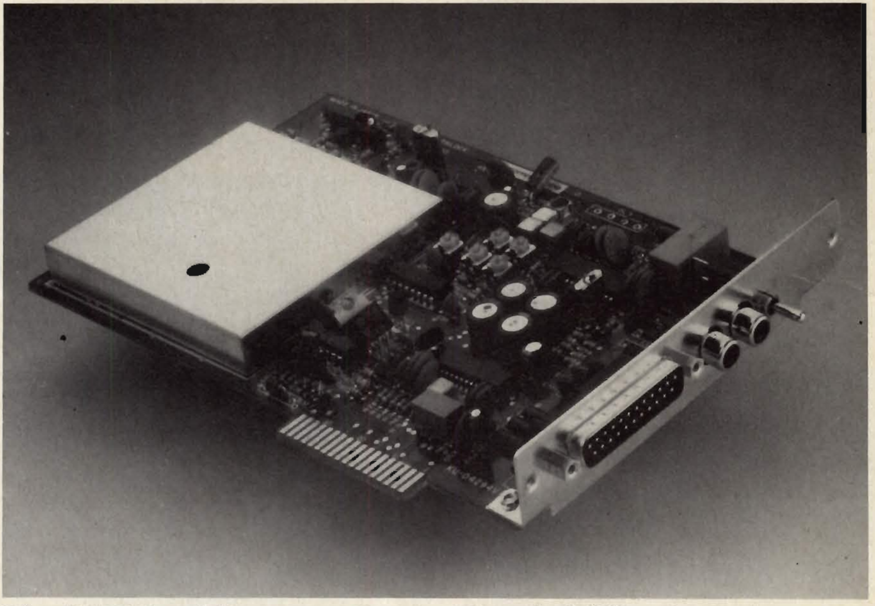


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SEQUENCER

KCS v1.6A, the latest version of Dr. T's Keyboard-Controlled Sequencer, features support for the internal IFF sounds of the computer, and the ability to load industry standard MIDI files. Price is $249; registered owners can upgrade for $15.00.

Dr. T's Music Software, 617-244-6954 (see address list, page 17).
Circle #123 on Reader Service Card



The A2300 board lets you synch output from the 2000 and outside sources.

GENLOCK BOARD

Commodore's A2300 Genlock Board ($399) for the 2000 permits Amiga-generated graphics and text to be synchronized and combined with output from standard external video sources such as VCRs, video cameras, and laserdisc players. Users can add titles, color graphics, and 3-D animation to professional and home video productions. With one of the available graphics or video software programs, text and graphics can be developed on the Amiga and then integrated into the video. The board installs into the 2000's CPU internal video expansion slot.

Commodore Business Machines, 215-431-9100 (see address list, page 17).
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STORYBOARDING

MichTron's *VIVA* line of Visual Interfaced Video Authoring programs consists of three separate "storyboarding" programs offering three levels of sophistication.

VIVA ($99.95) lets students, teachers, professionals, and others easily create applications to express their ideas by using a visual construction set represented by icons. Users can create, manage, and display text, graphics, video, sound, color, and animation. The software can also control VCRs, laserdisk players, and other visual media devices. The icon-driven program combines a graphical user interface, graphics libraries, custom fonts, easy editing capabilities, a speech module, and other features.

VIVA Professional ($599.95) adds record-keeping databases and expert systems to the basic *VIVA* system, making it a useful tool for the instructor, software developer, or hypermedia author who wants to create a presentation with the added capabilities of student performance tracking, the development of artificial intelligence applications, and the creation of hyperbases. These applications can be utilized by either *VIVA* or *VIVA Professional.*

VIVA Presents ($49.95), a "quick script" version of *VIVA,* is an 18-instruction software tool for fast storyboarding of applications or presentations that don't require extensive branching, recording, or other sophisticated authoring procedures. These presentations can include text, graphics, video, sound, color, and animation.

MichTron, 313-332-5452 (see address list, page 17).
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BRITISH INVASION

MichTron will be distributing in the US many of the Amiga products sold in the UK by HiSoft. These include the following:

HiSoft BASIC ($159.95), a standard BASIC compiler capable of running in the GEM/Intuition environment or under a command processor, permits the writing of desk accessories without learning the other high level languages that support such applications.

Devpac Amiga Version 2 ($99.95), an assembler, editor, debugger, and disassembler, includes all the features of the Atari ST versions, but runs much faster, assembling source files at speeds of up to 70,000 lines per minute. The editor runs under Intuition and allows control by menu selection, or from the keyboard using optional commands.

MichTron, 313-332-5452 (see address list, page 17).
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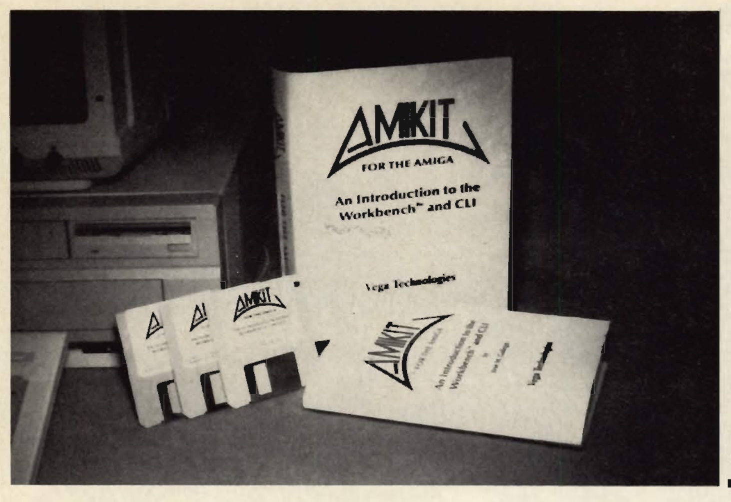
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***AmiKit's** book and three disks teach the beginning Amiga user about the Workbench and CLI, and allow him to do word processing, play games, and more.*



The computer and video revolutions merge in* Introduction to the CLI, *a VHS tape that lets you learn to use the Command Line Interface at your own pace.

TUTORIALS

Two instructional aids from Vega Technologies:

AmiKit ($39.95) consists of a 170 page book to aid the beginner in using the Workbench, the CLI, and modems, two disks of documented public domain programs including a word processor, a communications program, and a spreadsheet, and a third disk containing the latest official version of the Workbench.

Introduction to the CLI ($29.95) is a videotape that utilizes modern education techniques to demonstrate the use of the Command Line Interface.

Vega Technologies, 619-477-2024 (see address list, page 17).

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FONT DISK

The first in Free Spirit's Media Line series of art disks, *Amiga Font Disk 1* ($34.95) contains nine different bitmap fonts designed for professional use. The fonts, created by Danish designer Tore Bahnson, are suited for professional video work such as titling and design, desktop publishing headings, graphics, animation, and other applications. All international characters are included.

Free Spirit Software, 215-683-5609 (see address list, page 17).

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TELECOM PROGRAM

The *VTX On-Line* communications program ($79.95) provides online help with pages referenced to the manual, scripting with automatic generation, clipboard-compatible capture buffer, and mouse or menu interface. The program supports CompuServe GIF raster graphics, with HAM mode support for 256 colors. Protocols include ASCII, Xmodem, Xmodem-1K, Ymodem, Kermit, and others.

MichTron, 313-332-5452 (see address list, page 17).

Circle #132 on Reader Service Card

WP AND DATABASE

A database and a word processor from Anco, designed for ease of use and for compatibility with each other:

Micro Base ($34.95) includes fast sort and search facilities and a label printer that allows onscreen viewing (useful for detecting duplicate records), and has no restrictions on the number of records in a database or number of/length of fields.

Micro Text ($34.95) offers the writer the usual editing and document formatting features, plus the ability to remap the keyboard to suit the requirements of the major European languages.

Anco Software, 412-947-3922 (see address list, page 17).

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B&W SCAN SYSTEM

Gold Disk has developed a hardware/software interface for the Canon IX12 scanner that will facilitate the saving of Amiga pictures as IFF files. The user simply feeds a page containing an image into the scanner, which saves the image as a black and white IFF file at 75, 150, 200, or 300 dots per inch. Software control permits the definition of regions of scanned pages for high resolution use. The scanned images can be used in any Amiga program supporting the IFF standard. Price of the scanner complete with parallel port hardware and software interface is $1095.

Gold Disk, 416-828-0913 (see address list, page 17).

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DRIVE SYSTEM

The Fasttrak Drive System for the 500 and 1000 ($799) features system autoboot (v1.3), full autoconfiguring, fast disk transfer rates, utilities for setup and backup/restore, SCSI hardware supporting up to 14 drives, and pass-through bus expansion. The steel drive enclosure houses a cooling fan, internal power supply, and a power line filter. Options include a 512K to 8 meg RAM expander, a math accelerator board—and for the truly serious user, the ST-40 Digital Cassette Streaming Tape subsystem, offering a 60 meg formatted capacity per cassette, 4-minute 20 meg backup, DB-25 Macintosh-compatible SCSI port, 86.3K per second data transfer rate, internal 7K buffer, and one minute rewind.

Xetec, Inc., 913-827-0685 (see address list, page 17).

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Q-BACK TOOLS

Quarterback Tools ($79.95) consists of a number of utilities for enhancing hard disk performance. With it you can improve your hard disk organization to speed file access, undelete deleted files, map disk usage, verify readability of every block on the disk, map out bad sectors, detect and fix disk-corrupted directories, verify file integrity, edit files and disk sectors, search the disk for files, and compare file contents.

Central Coast Software, 805-528-4906 (see address list, page 17).

Circle #136 on Reader Service Card

GFA BASIC

Available for two years in an Atari ST version, *Amiga GFA BASIC 3.0* ($99.95) offers speed and power superior to Amiga BASIC's. The program's interactive editor is intelligent and thus able to identify common programming errors before the program is run. Graphic support is powerful and easy to use–for example, a filled polygon can be created via the single POLYFILL command. Menu lists and pull-down menus are created with the Menu Construction Tool and special *GFA-BASIC* commands.

Because *Amiga GFA BASIC 3.0* is compatible with the Atari ST system, the many books already available on the language can be used by Amiga owners. These include the following:

Programming with GFA BASIC 3.0 ($24.95) begins where the *GFA BASIC* manual leaves off, covering new structured programming commands, integer math, the AES and A-Line libraries, and other topics.

Concepts in Programming ($24.95) teaches structured programming, then lets you put your learning into practice by creating a 3-D object editor and a text editor in *GFA BASIC. The GFA BASIC Programmers Reference Guide* ($29.95) moves from a complete explanation of *GFA BASIC 2.0* into detailed examples of graphics, sound, and telecommunications programming.

GFA BASIC Training–Reboot Camp ($19.95), an easy to understand tutorial, provides beginning programmers with a foundation in techniques and concepts.

MichTron, 313-332-5452 (see address list, page 17).

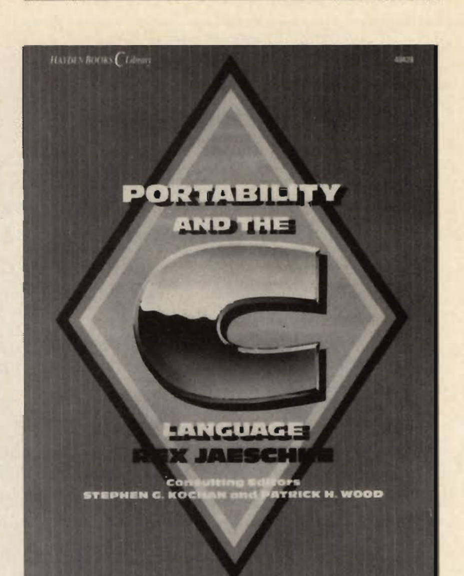
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C TRAVEL

Portability and the C Language defines and explains the technical aspects of designing and writing C programs that are to be compiled across a diverse number of hardware and OS environments. Organized around the ANSI C standard, it discusses portability from a C language perspective and covers implementation-specific issues as they arise. 400 pages; softcover $24.95, hardcover $34.95.

Hayden Books, 317-298-5400 (see address list, page 17).

Circle #126 on Reeder Service Card



Writing C programs to cross-compile.

THIRD BASE

Superbase Professional 3 adds telecommunications facilities (for transferring files to and from other computers running *Superbase);* a more powerful forms editor (featuring a REPLICATE function that lets the user define an area of the form and replicate it a number of times); and cross-file validation and lookup. Additionally, security key copy protection has been lifted on backup disks for registered owners–three non-protected backup disks can be ordered for $10.00. Price is $349.95; registered owners of earlier versions can upgrade for $50.00.

Precision Incorporated, 214-929-4888 (see address list, page 17).

Circle #127 on Reader Service Card

ROLE-PLAYING BBS

In addition to offering features like message areas and electronic mail, the ready-to-run *Role Playing Game BBS* makes each user a warrior in a medieval quest for gold and glory. You can buy or sell armor, food, and weapons in the Town; wager on chicken fighting and arm wrestling in the Gambling Casino; fight monsters and other users in the Tournament; and gain skills in the Training Spa. Groups of users can band together for team play. The sysop can customize many of the external files to create a unique board. Price is $59.95 plus $5.00 shipping.

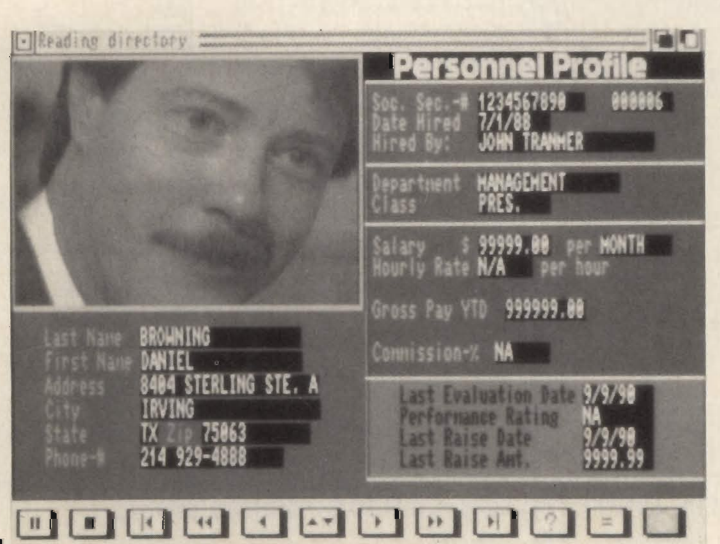
Mercury Software (see address list, page 17).

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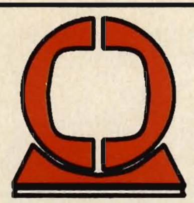
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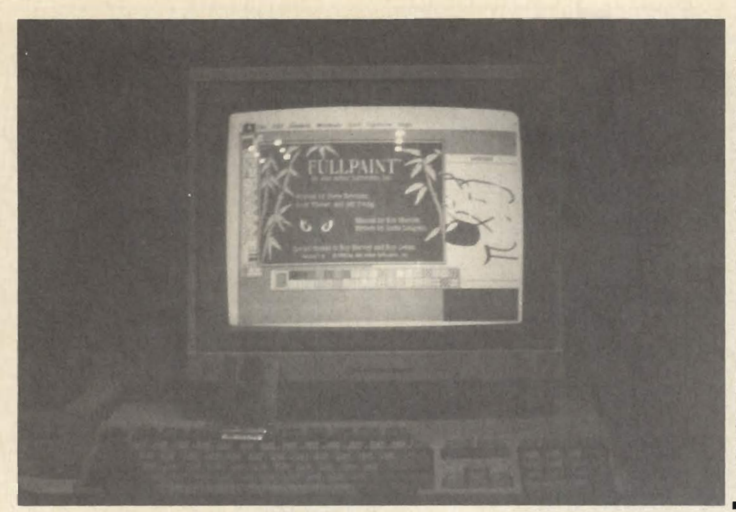
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Shown is a Max-equipped Amiga running Macintosh software at November's World of Commodore. Screen format can be medium or high resolution.

ware, and is now accepting submissions of productivity, creativity, and video programs.

Software Visions, 508-875-1238 (see address list, page 17).

Circle #141 on Reader Service Card

MichTron is expanding its Book Division and wants manuscripts related to the Amiga and other computers.

MichTron, 313-332-5452 (see address list, page 17).

Circle #142 on Reader Service Card

The Disc Company is interested in seeing Amiga programs in all categories that are complete or near completion. In addition to distribution, they will supply the technical support needed to finalize your creation. Contact Jack Light.

The Disc Company, 313-665-5540 (see address list, page 17).

Circle #143 on Reader Service Card

THREE KINDS OF MICE

A new leather mouse pad from Vega is available in three traction grades: high (for drawing and other precise operations), normal (for normal operations), and low (for fast movement, as in games). Price of the 9 x 10.5" pad is $15.95.

Vega Technologies, 619-477-2024 (see address list, page 17).

Circle #131 on Reader Service Card

HIGH-END CAD

Ultra Design ($299.95), an advanced CAD system with a customizable user interface, features auto-dimensioning with configurable parameters to suit any standard; a PasteUp system for the output of several drawings in one operation; screen coloring by pen style, group, or layer; advanced text features including user-defined fonts and choice of height, width, angle, slant, and flip X & Y; full library support; and user-defined view ports and points and grid markings. One megabyte is required.

Progressive Peripherals & Software, 303-825-4144 (see address list, page 17).

Circle #144 on Reader Service Card

ART CONTEST

Anakin Research invites Amiga artists to submit images or animations created with the *Easyl* graphics tablet to the Amiga *Easyl* Art Contest. Any Amiga picture in IFF graphics format (up to 1000 x 1000 pixels and 4096 colors) and any animation in any standard animation file format are acceptable. Prizes of $500, $250, and $100 worth of Amiga software will be awarded to the first, second, and third prize winners; 20 runners-up will receive Anakin T-shirts or coffee mugs. All entrants will receive a free *Easyl* Art Disk. Entries must be postmarked by January 15.

Anakin Research, 415-571-8766; in Canada 416-744-4246 (see address list, page 17).

Circle #145 on Reader Service Card

MACINTOSH LINKS

Two new means of communication with the Macintosh world:

Max ($149.95) will allow the Amiga user to run "most" Macintosh software. The unit consists of both software and hardware, a ROM cartridge that plugs into the external drive port of a 500, 1000, or 2000, allowing you to plug in 64K or 128K Macintosh ROMs. Screen format can be selected between medium res (640 x 200 with scrolling) or hi-res interlaced display (640 x 400 without need to scroll). Mac disks cannot be read directly by an Amiga drive; however, *Max* can format a transfer disk that allows 272K of disk space to be read by both a Macintosh and an Amiga.

ReadySoft Inc., 416-731-4175 (see address list, page 17).

Circle #138 on Reader Service Card

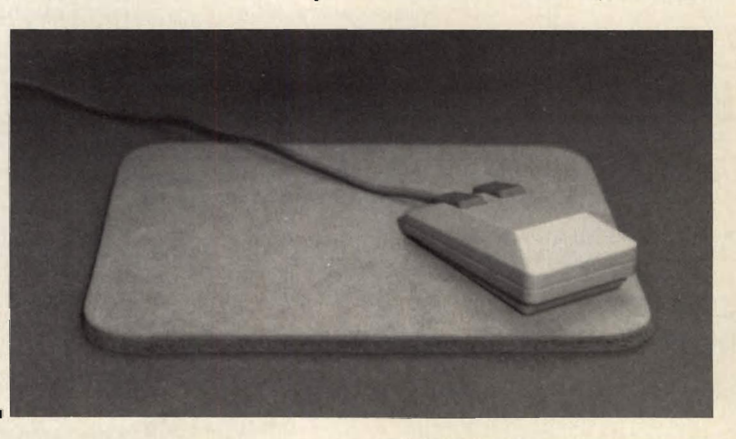
MAC-2-DOS transfers Macintosh files to and from the Amiga, reading, writing, and formatting single-sided disks (flat file format) or double-sided disks (hierarchical file format). It transfers ASCII files and provides IFF conversion utilities to and from *MacPaint* and other Macintosh graphics formats. The program requires use of a Macintosh external 3.5" drive and an adapter cable to allow the Mac drive to be used with the Amiga. Price of *MAC-2-DOS* with drive and cable is $295.00; with cable only, $89.95.

Central Coast Software, 805-528-4906 (see address list, page 17).

Circle #139 on Reader Service Card

FLORIDA SHOW

The first AmiFORUM (a scaled-down regional version of AmiEXPO) will be held January 14 and 15 at the Hyatt Orlando in Orlando, Florida.



Is your mouse squeaking? Vega's pad can extend its life and improve control by providing a smooth surface to rub it against.

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The Amiga 2500 comes standard with a 68020 processor and 2 megs of memory.

Tickets are $10 for one day and $15 for both days. Master Classes in Amiga desktop video, animation, programming, and graphics cost $50 each.

Additionally, dates have been announced for the next two AmiEXPOs: March 3-5 at New York City's Marriott Marquis and July 28-30 at the Hyatt Regency in Chicago.

AmiEXPO, 800-32-AMIGA or 212-867-4663 (see address list, page 17).
Circle #146 on Reader Service Card

TWO AMIGAS

Commodore has announced two new Amiga models–each actually just an enhanced Amiga 2000:

The Amiga 2000HD ($2999) includes a preconfigured 40 megabyte hard disk drive with an average access time of 28 milliseconds, and the A2090A autoboot hard disk controller, containing both ST-506 and SCSI interfaces with buffered direct memory access for high speed burst data transfer. The ROM-installed Kickstart v. 1.3 provides autoboot for the hard disk, and Workbench v. 1.3 features a new fast filing system that provides an up to 20 times performance increase for both reads and writes. Also provided is an expanded library of printer drivers and print control functions that include control of density, dithering, color correction, and anti-aliasing. The computer's Install disk will automatically reinstall the system software if necessary.

Intended to allow graphics, animation, and video professionals to operate at workstation-level speeds, the Amiga 2500 ($4699) is configured with an A2620/2 co-processor card that comes standard with the Motorola 68020 processor, 2 megabytes of 32 bit RAM (expandable to 4 megs), and a 68881 math co-processor.

Commodore Business Machines, 215-431-9100 (see address list, page 17).
Circle #162 on Reader Service Card

MORE ON MAGELLAN

Emerald Intelligence is offering their *Magellan* artificial intelligence program to user group members for $135 plus shipping. Proof of membership (photocopy of membership card, current dues receipt, etc.) is required. Orders must be placed by mail, directly with Emerald Intelligence.

Magellan Update, a monthly newsletter, will feature articles on artificial intelligence in general and on Magellan specifically, plus new product anoucements, special offers, productivity tips, and more. Registered owners of the program will receive a one year complimentary subscription; others can order subs for $10 per year in the US, $15 (US funds) in Canada, and $20 (US funds) elsewhere.

Emerald Intelligence, 313-663-8757 (see address list, page 17).
Circle #161 on Reader Service Card

ULTRA DOS UPDATE

An update of Free Spirit's *Ultra DOS Utilities* ($59.95) provides compatibility with AmigaDOS Version 1.3 (as well as 1.2). In addition to supporting the enhancements of AmigaDOS 1.3, new features have been added to make file management and backup easier. Registered *Ultra DOS* owners can obtain the upgrade by mailing in their original disk and $10.00

Free Spirit Software, Inc., 800-552-6777 or 215-683-5609 (see address list, page 17).
Circle #158 on Reader Service Card

Additionally, *Ultra DOS* will henceforth be included free on all hard disk drives sold by Memory and Storage Technology.

M.A.S.T. (see address list, page 17).
Circle #159 on Reader Service Card

GAMES

New from MicroDeal:

Goldrunner II ($39.95) casts you as the descendant of the hero who 50 years ago defeated a contingent of space pirates. Today robot pilots defend the human race–but pirates have captured the robots and hidden them on 16 disused space research platforms. Alone in a single-seat fighter, you must fly to the platform, survive the pirates' cyborg defense system, and recover as many robots as you can.

Zero Gravity ($29.95) is the favorite means of exercise during long voyages through space in the 22nd century. One player is placed on each side of the cargo bay in the weightless environment of space. A red and white ball is volleyed using rectangular paddles. Goals are scored by getting the ball past your opponent (who can be controlled by the computer or by another human). Certain panels along the side can be struck with the ball to add or subtract points. The divided screen shows the viewpoint of each player.

Ringside ($39.95) requires you to fight your way through 10 opponents to win the world championship of boxing. You can use the supplied pugilists, or access the Build-a-Fighter menu to change their names, weights, and ages.

You also have the option of assigning Strength Points to a variety of the boxers' techniques. Customized opponents can be saved to disk. For one or two players.

MicroDeal's *Hits Disk* ($49.95) brings together four recent releases: *Goldrunner* (first installment in the series—see above), *Slaygon* (use the most sophisticated robot ever created to destroy the Cybordynamics Laboratory and preserve peace and justice in the world), *Jupiter Probe* (scour the surface of Jupiter in search of the hostile race of beings seeking to conquer the earth), and *Karate Kid Part II* (guide Daniel LaRusso through battle after battle, ultimately facing the evil Chozen in the Castle of King Shohasahi).

MicroDeal, 313-332-5452 (see address list, page 17).

Circle #148 on Reader Service Card

Newly adapted to the Amiga, Strategic Studies Group's *Reach for the Stars* ($39.95) requires the player to build an interstellar empire from a single colony. This requires him to successfully manage his own economy and pursue the correct military strategy, including maintaining a strong space navy. Four players compete, with the computer filling in any positions not occupied by humans. Distributed by EA.

Electronic Arts, 415-571-7171 (see address list, page 17).

Circle #149 on Reader Service Card

SpaceAce 2495 ($24.95) lets you choose one of six customizable ships and fly into deep space for a duel with a human or computer opponent. Elements such as gravity, the sun, inertia, and black holes play a role. Developed by Bobware; distributed by T.S.R. Hutchinson Co.

T.S.R. Hutchinson Co., 713-448-6143 (see address list, page 17).

Circle #151 on Reader Service Card

Three forthcoming titles from Incognito (no prices available yet):

Secret agent *Targis* has followed to their lair a group of spies who have stolen valuable parts from a secret laboratory. Equipped only with a blaster, he must travel through over 100 randomly selectable levels of the spies' cave hideout to retrieve the stolen parts. A screen editor permits the creation of new mazes.

Kingdoms of England charges you with the quest of reuniting the lands of England. One or two players have full control over hand to hand combat between the opposing armies. Battles and special occurrences are represented on a full sized map of England.

The survival of your scaly race depends on your escaping from the *Snake Pit*, a dungeon maze through which you must slither, finding secret walls and passageways and avoiding traps.

Incognito Software, 313-462-2148 (see address list, page 17).

Circle #152 on Reader Service Card

Highway Hawks ($34.95), a strategic racing car simulator on two disks, requires you to shoot at assassins while handling a high-powered vehicle. According to your skills, you'll be awarded faster cars and more lethal weapons.

Face Off ($24.95) offers a league-style hockey competition for one or two players.

Anco Software, 412-947-3922 (see address list, page 17).

Circle #153 on Reader Service Card

Based on the sci-fi novel, *Neuromancer* ($39.95) lets you, a futuristic cowboy, invade the electronic universe that ties together all of Chiba City's computer networks. Over 57 real world locations can be viewed, and over 40 databases broken into. The game features a digitized original soundtrack by DEVO.

Interplay Productions, 714-545-9001 (see address list, page 17).

Circle #154 on Reader Service Card

Corruption ($44.95) finds you, a partner in a London law firm, framed in an insider trading scandal. To survive, you must be more devious than your enemies as you interact with over 15 characters in London's financial world and underworld.

Rainbird, 415-322-0412 (see address list, page 17).

Circle #163 on Reader Service Card

Another conversion from the coin-ops to the Amiga, *Double Dragon* ($39.99) follows martial arts expert Billy Lee in his search for his girlfriend, kidnapped by the mysterious Shadow Boss. He must fight his way through city and forest to reach the climactic confrontation with the Shadow Boss, who turns out to be his twin brother.

Arcadia, 714-631-1001 (see address list, page 17).

Circle #164 on Reader Service Card

Master Ninja: Shadow Warrior of Death lets the player guide a ninja warrior on a quest to recover a stolen magic sword. He must travel through 25 chambers of the warlord's castle while battling other ninjas, Samurai guards, mystic priests, curses, and tigers. Your ninja must use strategy and martial arts skills to defeat his opponents, avoid hidden obstacles, seize the sword, and slay the warlord. The characters, which measure over 3½" tall each, employ more than 20 martial arts moves, including punches, kicks, chops, and rolls, plus historic ninja weapons like knives, blinding powder, throwing stars, blow dart guns, and bow and arrow. There are three play levels.

Paragon Software, 412-838-1166 (see address list, page 17).

Circle #183 on Reader Service Card

Data East and game designer Scott Orr, founder of Gamestar, have entered into a partnership to produce a new line of action-oriented sports software for the Amiga and other home computers. Delivery is scheduled to begin in late 1989.

Data East USA, Inc., 408-286-7080 (see address list, page 17).

Circle #184 on Reader Service Card

First *Ulysses*—then *Lady Chatterly's Lover*—then *Tropic of Cancer*—and now *Sex Vixens from Space*. Free Spirit's adult graphic adventure has earned its place alongside these other twentieth century works not for its literary merit, but for being likewise censored by government officials unable to understand it and unqualified to judge it. On its way into Great Britain, a shipment of the game was recently impounded and apparently destroyed by British authorities. As the distribution manager for England's Precision Software, which imported the game, pointed out: "(The porn squad) probably had not even seen it, unless they had an Amiga on hand at the airport." Joe Hubbard of Free Spirit had the following to say: "While *Sex Vixens from Space* may be a bit racy, it is not pornographic. Apparently, the British authorities are either quite prudish or completely lacking a sense of humor. Regardless, freedom of artistic expression and the freedom to disseminate such are cornerstones of democracy. The act of seizing these games is the act of a fascist government."



Big Borus, the evil ringmaster, has kidnapped your aunt and put her to work in his circus in the Arctic, from which you must rescue her—and that's why they call it....

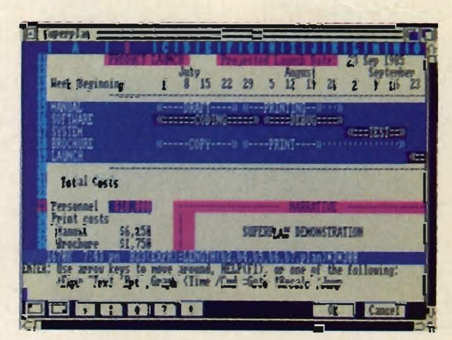
Free Spirit Software, Inc., 800-552-6777 or 215-683-5609 (see address list, page 17).
Circle #185 on Reader Service Card

Charlie the Chimp's aunt has been kidnapped by an evil ringmaster who has put her to work in his circus in the Arctic. To rescue her, Charlie and his friend Penguin Pete embark on the *Aunt Arctic Adventure* ($39.95) that takes them through 50 levels, each of which is four by four screens in size. The game supports two players on-screen at the same time; a one-player mode is also available.

Mindware International, 303-733-3707 (see address list, page 17).
Circle #150 on Reader Service Card

IT'S SUPERPLAN

Superplan ($149.95) merges into a single environment a 74-function spreadsheet, project management software (with time/expense planning, resource allocation, etc.), and business graphics software (with 18 kinds of charts, 5 titles, and 10 fonts). The included macro language lets users customize all aspects of their work environment, from menus through report generation.

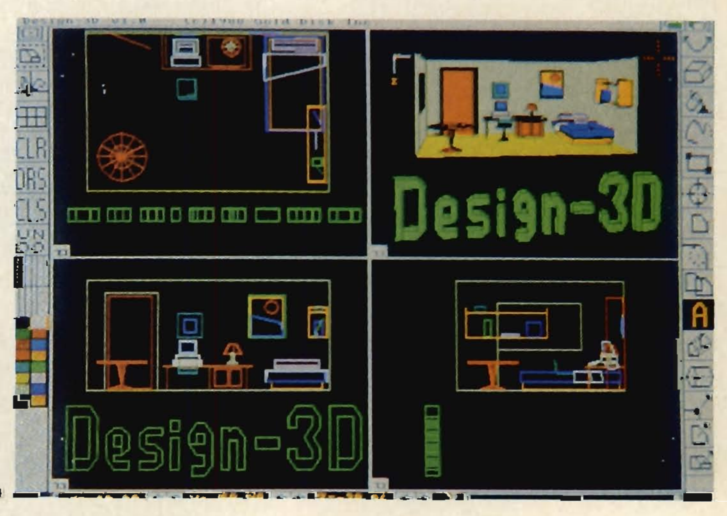


Superplan *combines graphics, product management, and spreadsheet programs.*

Precision Incorporated, 214-929-4888 (see address list, page 17).
Circle #147 on Reader Service Card

3D DESIGNING

Design-3D ($99.95) lets users from hobbyists to engineers model in wire



Gold Disk's Design-3D *lets designers, artists, architects, and engineers model in three dimensions with 6 line types, 16 colors, and fast flat shading.*

frames with 6 line types and 16 colors, with dithering to emulate additional colors and fast flat shading. Top, side, front, and perspective views are provided. Axial extrusion allows for fast modeling of symmetrical objects. The program's font editor allows support for and control over 3D. Work can be done in hi-res, interlace or non-interlace, in any unit of measure—inches, centimeters, etc. The ANIM format is supported to import images into *PageFlipper Plus*, or animate within the program in real time. One megabyte is required.

Gold Disk, 416-828-0913 (see address list, this page).

Circle #160 on Reader Service Card

AMIGA DOS V. 1.3

Version 1.3 of the Amiga operating system (consisting of Workbench 1.3 and Kickstart 1.3) offers an expanded library of printer drivers and print control functions, allowing printing times of up to 10 times faster than previous versions. In addition, the new hard disk Fast Filing System makes it possible to perform reads and writes up to 12 times faster. The software also features improvements in graphic printing and floating point math operations. New to the system are mountable device drivers, including a console editor for command line editing and a recoverable RAM device that allows for retention of data between warm boots. Also, 15 new utilities have been added to the Workbench Command directory.

With the addition of the 1.3 Kickstart ROM to the Amiga 500 or 2000, users can utilize the autoboot protocol, allowing the operating system to be booted from devices like autoboot hard disk controllers and the recoverable Amiga RAM disk. Workbench 1.3 is fully compatible with Kickstart 1.2 ROMs; a ROM upgrade of Kickstart 1.3 is not necessary unless you desire the autoboot feature.

The new operating system is now being shipped with Amiga units; an Enhancer Software pack containing the Kickstart disk for Amiga 1000 owners and Workbench 1.3 and Extras 1.3 for 500/1000/2000 owners is available for $29.95. The Kickstart ROM is available for installation at authorized Amiga service centers.

Commodore Business Machines, 215-431-9100 (see address list, this page).

Circle #171 on Reader Service Card

POOR MAN'S SOFTWARE

Poor Person Software's *Thinker* idea processor ($59.00) allows you to move instantly from one section of your document to another, Hypertext-style, and create, view, and manipulate outlines as in Hierarchical-text. As a database, the program allows freeform records with multiple links; as a writing aid, it allows unlimited cross-referencing and reorganization; and as an aid to program design, *Thinker* helps control the structure of programs and integrates programs and their documentation.

Poor Person Software (see address list, this page).

Circle #194 on Reader Service Card

Companies Mentioned in Scuttlebutt

ASDG, Inc.
925 Stewart St.
Madison, WI 52713
Phone: 608-273-6585

Activision
3885 Bohannon Drive
Menlo Park, CA 94025
Phone: 415-329-0800

Aegis
2115 Pico Blvd.
Santa Monica, CA 90405
Phone: 213-392-9972

AmiEXPO
211 E. 43rd St., Suite 301
New York, NY 10017
Phone: 212-867-4663

Anakin Research
100 Westmore Dr., Unit 11C
Rexdale, Ontario
Canada M9V 5C3
Phone: 416-744-4246

Anco Software Inc.
P.O. Box 292
Burgettstown, PA 15021
Phone: 412-947-3922

Arcadia
711 W. 17th St., Unit G9
Costa Mesa, CA 92627
Phone: 714-631-1001

Brown-Wagh Publishing
16795 Lark Ave., Suite 210
Los Gatos, CA 95030
Phone: 408-395-3838

Central Coast Software
268 Bowie Drive
Los Osos, CA 93402
Phone: 805-528-4906

Commodore Business Machines, Inc.
1200 Wilson Drive
West Chester, PA 19380
Phone: 215-431-9100

Data East USA, Inc.
470 Needles Drive
San Jose, CA 95112
Phone: 408-286-7074

Dr. T's Music Software
220 Boyston Street
Chestnut Hill, MA 02167
Phone: 617-244-6954

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
Phone: 415-571-7171

Emerald Intelligence
334 South State Street
Ann Arbor, MI 48104
Phone: 313-663-8757

Free Spirit Software
P.O. Box 128, 58 Noble St.
Kutztown, PA 19530
Phone: 215-683-5609

Gold Disk Inc.
P.O. Box 789, Streetsville
Mississauga, Ontario
Canada L5M 2C2
Phone: 416-828-0913

Hayden Books
c/o **Howard W. Sams and Company**
4300 West 62nd Street
Indianapolis, IN 46268
Phone: 317-298-5400

Incognito Software
34518 Warren, Suite 149
Westland, MI 48185
Phone: 313-462-2148

Interplay Productions
1575 Corporate Drive
Costa Mesa, CA 92626
Phone: 714-545-9001

M.A.S.T.
7631 East Greenway Road
Scottsdale, AZ 85260
Phone: 602-483-6359

Mercury Software
P.O. Box 83
Wilton, CT 06897

MichTron and MicroDeal
576 S. Telegraph
Pontiac, MI 48053
Phone: 313-334-5700

Mindware
110 Dunlop Street
West, Box 22158
Barrie, Ontario
Canada L4M 5R3
Phone: 705-737-5998

New Horizons Software
P.O. Box 43167
Austin, TX 78745
Phone: 512-328-6650

Oxxi Inc.
P.O. Box 90309
Long Beach, CA 90809
Phone: 213-427-1227

Paragon Software
600 Rugh Street, Suite A
Greensburg, PA 15601
Phone: 412-838-1166

Poor Person Software
3721 Starr King Circle
Palo Alto, CA 94306

Precision Incorporated
8404 Sterling St., Suite A
Irving, TX 75063
Phone: 214-929-4888

Progressive Peripherals & Software
464 Kalamath Street
Denver, CO 80204
Phone: 303-825-4144

RGB Video Creations
3944 Florida Blvd., Suite 102
Palm Beach Gardens, FL
Phone: 407-622-0138

Rainbird
3885 Bohannon Drive
Menlo Park, CA 94025
Phone: 415-322-0412

ReadySoft Inc.
P.O. Box 1222
Lewiston, NY 14092
Phone: 416-731-4175

Software Visions, Inc.
P.O. Box 3319
Framingham, MA 01701
Phone: 617-875-1238

T.S.R. Hutchinson Co.
110 W. Arrowdale
Houston, TX 77037-3801
Phone: 713-448-6143

The Disc Company
3135 S. State Street
Ann Arbor, MI 48108
Phone: 313-665-5540

Vega Technologies, Inc.
3171 Iris Street
San Ysidro, CA 92073
Phone: 619-477-2024

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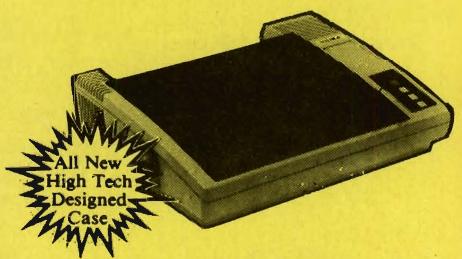
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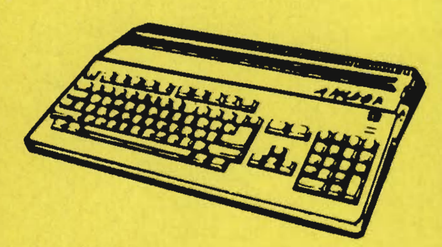
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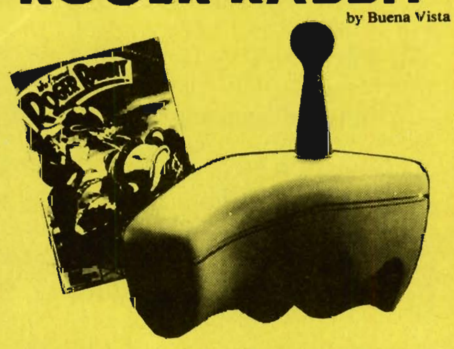
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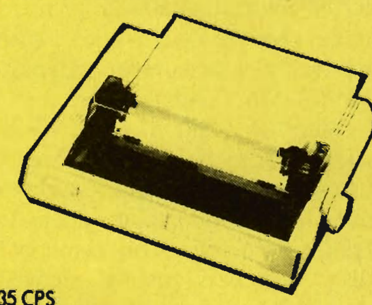
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TOP DRAW

Aegis has announced a program allowing users of their previous CAD programs to upgrade to *Aegis Draw 2000,* their new high end CAD program (reviewed in this issue). Registered owners of *Aegis Draw* can receive *2000* for $150; owners of *Draw Plus* can upgrade for $20 in the US, $30 for other countries. Additionally, owners of *Draw Plus* can receive a *2000* manual in place of their current manual at no charge.

Aegis, 800-345-9871 or 213-392-9972 (see address list, page 17).
Circle #169 on Reader Service Card

SECOND PRINTING

DeluxePrint II ($79.95) updates EA's program for printing signs, banners, calendars, and the like with an improved interface (all operations are now via pulldown menus), better print quality, four special display fonts allowing point sizes of 40 and above, and the ability to resize icons on the screen and import full color images as icons or backgrounds. One megabyte of memory is recommended.

Electronic Arts, 415-571-7171 (see address list, page 17).
Circle #170 on Reader Service Card

MORE PERSONAL

Superbase Personal 2 ($149.95) is a simplified version of Precision's *Superbase Professional 3* for users who don't require the latter program's database management language or forms editor. Otherwise, it includes most of the features of *SP3* (see page 9), including a text editor, mail merge facility, and telecommunications. Other features include VCR-style symbolic browsing controls, relational data entry, and the ability to link and retrieve external text, graphic, and sound files. Registered owners of *Superbase Personal* who bought the product before October 1, 1988 can upgrade for $35; those who bought it after that date can upgrade for $70. If you later decide that you need *Superbase Professional 3* after all, you can buy it for $200, which is the difference in price between the two products.

Precision Inc., 214-929-4888 (see address list, page 17).
Circle #172 on Reader Service Card

Superbase Personal 2 ***incorporates all of the latest data handling algorithms used in the*** **Professional** ***version, because both programs are compiled from the same code.***

III PLUS 3

With *A-Talk III* version 1.0c, Oxxi has added three telecommunications protocols to the program—YMODEM-g:, WXMODEM, and a ZMODEM with enhancements—as well as three new variables for use with the PROTOCOL command in the *A-Talk III* Script Language. Additionally, the method the program uses to find the Phonebook and saved settings has been revised, and a discrepancy between the program and the manual concerning the DIAL command has been corrected.

Oxxi Inc., 213-427-1227 (see address list, page 17).
Circle #173 on Reader Service Card

INTERFACES

Three interfaces from ASDG:

The SBX-GPIB ($199.00) is a complete IEEE 488 controller on an IEEE 959 (iSBX) module. It handles all IEEE 488 1975/1978 functions and the IEEE 488A 1980 supplement, and supports all talker/listener/controller functions including multiple controllers with passing of control.

The SBX-SCSI ($199.00), a complete Small Computer Systems Interface controller on an IEEE 959 module, allows the host computer to interface to hard disks, removable media hard disks, floppy disks, streaming tapes, printers, and networks over the SCSI interface bus.

The SBX-Serial/2 ($199.00) is a two channel full duplex asynchronous serial communications controller with RS 232 drivers on an IEEE 959 module. Complete and independent control is provided for each channel including baud rate generation.

ASDG Inc., 608-273-6585 (see address list, page 17).
Circle #174 on Reader Service Card

WP WITH DATABASE

Brown-Wagh's *Pen Pal* (about $150) includes something most word processors don't: a built-in database manager, intended for use in mailing list operations. Also included is a graphic object drawing manager which makes it possible to mix objects freely with IFF pictures and text. Text can be set to flow automatically around graphics, and objects are layered for positioning behind or in front of other objects. Also included are a 100,000 word spelling dictionary, forms generation, and full page view with the ability to edit graphics objects while at full page. 1MB is required.

Brown-Wagh Publishing, 408-395-3838 (see address list, page 17).
Circle #176 on Reader Service Card

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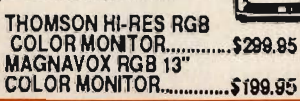
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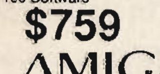
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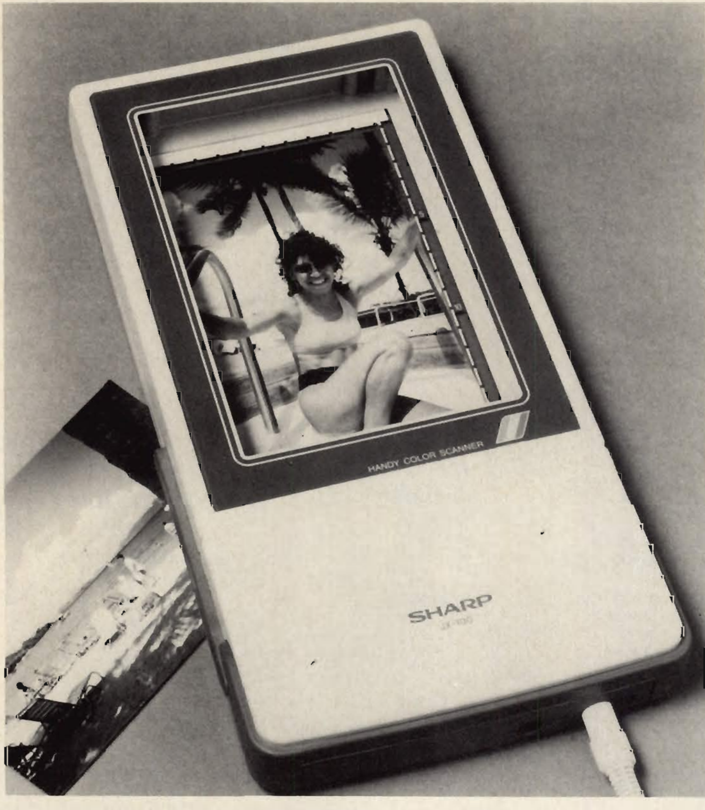
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The first hand-held color scanner to be made available to Amiga users (and the smallest color scanner in the world), Sharp's JX-100 will offer many of the capabilities of full-sized units. ASDG's ScanLab/100 *will make Amiga use possible.*

SCANNER INTERFACES

ASDG's *Professional ScanLab* ($995) consists of all the software, cables, and hardware interfaces necessary to allow the Amiga 2000 to control Sharp's JX-300 and JX-450 color scanners. High quality 24 bit data from the scanner can be converted into Amiga HAM images or maintained in its 24 bit true color form. When sent to a professional output device, the result is a palette of 16 million possible colors—the highest level of picture quality available with any Amiga product. Professional quality color separations for magazine publishing and advertising can thereby be produced at a savings of thousands of dollars over a comparable dedicated system. *Professional ScanLab* also supports the largest picture resolutions of any Amiga scanning systems: 5100 x 3300.

ScanLab/100 is a hardware/software link between the Amiga 500, 1000, or 2000 and Sharp's hand-held JX-100 color scanner. In addition to a proprietary cable that converts the high speed interface of the JX-100 for use on the Amiga, *ScanLab/100* includes many of the same color processing capabilities as *Professional ScanLab*. Scheduled for release in early 1989, the JX-100 will be able to scan an area of about 4 x 6" at 200 DPI, and offer many of the capabilities of Sharp's more expensive scanners, including the ability to do black and white, gray scale, and color scanning for desktop publishing. The JX-100 will retail for $995; price of the *ScanLab/100* had not been announced at press time.

ASDG Inc., 608-273-6585 (see address list, page 17).

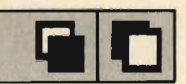
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VIDEO WORKSTATION

RGB's 19" rack mountable CVC Video Workstation ($795) provides Amiga 2000 owners with step-frame animation, frame accuracy, SMPTE time control, A/B roll editing, and the ability to control up to 32 video devices. Included are Computer System Associates' *DragStrip* RAM accelerator and *FasTrack* 68020 or 68030 processor boards. For an additional $75, RGB will mount your Amiga 2000 into the workstation.

RGB Video Creations, 407-622-0138 (see address list, page 17).

Circle #198 on Reader Service Card



Software and Applications for the Small Businessman

ANIMATE & MORE

By Ted Salamone

Every month brings new goodies to my door; every month I'm more impressed with the inventiveness, the quality, and the diversity of software for the Amiga. Just when I thought it was safe to settle on an animation program, *Photon Video Cel Animator* shows up. Then the mailman slips *Animation Multiplane* in my mailbox. It's too much to comprehend...but we'll try anyway.

MULTIPLANE

Animation Multiplane is an $89.95 (suggested retail) digital compositer from Hash Enterprises. This copy protected (!*?!$), single disk program requires 1 meg of RAM and at least two floppy drives. A hard drive is recommended. Animators will find unique features, an extremely productive interface, and cost effectiveness as the main benefit to using *Multiplane.*

Taking animation sequences from Hash's *Animation Apprentice,* or any other Amiga animator for that matter, users can create multiple levels of "geometric" planes. These planes dress up the sequences, making them much more professional—easily and quite inexpensively.

Going beyond simple foreground/background overlays, *AM* adds a number of startling transition effects—dissolves, color filtering, selective transparency, contrast and brightness control, pixelation, drop shadows, image offset, and strobe lighting.

The manual includes a few working examples to get you up to speed faster. Demo disks are available for $5.00 each; besides the stunning art, they are valuable idea generators. There is even a brief VHS video which introduces concepts, techniques, and the user interface.

AM's downside is limited to the copy protection scheme—the original disk functions as a key disk, and is required to boot the program. Actual tasks are performed with a work disk. However, there are several reasons why *AM* is a favorite—the interface is incredibly well designed, the feature set is lengthy, and it is very cost effective. Good going, Martin.

X-CAD DESIGNER

X-CAD is a full-featured, two dimensional Computer Aided Design program from Taurus Software in the U.K. Haitex Resources distributes it in the U.S., along with X-Specs and the *HaiCalc* spreadsheet.

Considering *X-CAD* for your architectural, design, or engineering shop? Then you'll need an Amiga with at least 2 megabytes of RAM and two floppy drives. Though a hard drive is only recommended, it's really a necessity from a productivity viewpoint.

Copy protection also rears its ugly head here. Only this time it's in the form of a dongle, a little plastic key that plugs into joyport 2. *X-CAD* looks for certain parameters inside the key. If it is defective, or not present, the software doesn't function. This means you are free to make as many working copies of the program as you like. Lose the dongle or damage it, however, and it doesn't matter how many copies you have. (The manual says dongle-free versions are available, but you have to contact Haitex to learn the particulars.)

Even adjusting for English conventions, the manual reads like molasses at the North Pole. Small print, poor organization, and obtuse instructions make *X-CAD* difficult to learn and implement. Even seasoned veterans will find it slow going at first. Novices should steer clear, as *X-CAD's* learning curve is steep—or a wall, depending on your level of expertise. Instead of easing the pain, the manual only magnifies the potential shock.

Command entry is via command line, or a nested menu system that occupies several lines across the top of the screen. Mouseclicks activate the selected command based on cursor position. The menus, however, do not really drive *X-CAD.* Mouseclick selections are entered into the com-

Contact the following companies directly for more information about the products profiled in this month's *Exec File:*

Animation Multiplane:
Hash Enterprises
2800 E. Evergreen Blvd.
Vancouver, WA 98661
Phone: 206-693-7443

X-CAD:
Haitex Resources
208 Carrollton Park,
Suite 1207
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Phone: 214-241-8030

Photon Cel Animator:
MicroIllusions
17408 Chatsworth Street
Granada Hills, CA 91344
Phone: 818-360-3715

VideoScape 3D v. 2.00 and **Modeler 3D:**
Aegis Development
2115 Pico Blvd.
Santa Monica, CA 90405
Phone: 213-306-0735

mand line automatically—from there they are actually executed. (This little item shouldn't matter to users; it's just an interesting insight into the program's design.)

Beginners will find the guided menu system indispensable. Without it, navigation through the many commands/levels would rapidly become a nightmare. Clicking on a function usually brings up another menu with its own selections. The number of levels (nestings), the number of menu lines across the top of the screen, and the actual commands displayed depend on the function(s) previously selected. Since the structure is hierarchical, only valid subcommands and menus can be displayed. That's the menu's strength.

X-CAD is definitely a powerhouse, from the number of layers and depths supported (256 and 8 respectively) to output on a multitude of color plotters, thermal transfer printers, and lasers. Run of the mill dot matrix printers are also supported. Various fonts are included; work can be done with points, lines, strings, arcs, splines, ellipses, and polygons. Edit commands such as stretch, scale, copy, move, rotate, zoom, and mirror work on individual items or user-specified groups.

You get the idea about the feature set; and you already know *X-CAD* is not for the faint of heart (beginners). In other words, *X-CAD* is an extremely powerful, precise, full color design tool for the serious practitioner. No one else need apply.

PHOTON CEL ANIMATOR

A MicroIllusions offering, *Cel* requires 1 meg of RAM and a disk drive. For serious work, however, a hard drive and a second floppy are recommended; 2.5 megs for low- and medium-res animation; and up to 9 megs for HAM or hi-res color animation.

Despite the hefty hardware investment, *Cel* provides a healthy return. Not copy protected, this single disk program stands alone or accepts images from *Photon Paint* (or any other IFF paint program). It even interfaces with the *Photon Video Transport* program.

Any way you slice it, *Cel's* an extremely powerful, well planned and executed audiovideo synchronizer. *(Cel* makes it easy to tie soundtracks and special effects to specific frames in a sequence.) It's also quite useful for pencil tests.

The program revolves around five menus: Project, Edit, Animate, Tools, and Color. Keyboard alternates are provided for most functions, as noted on the handy quick reference card.

The Project menu handles file access (open, save, etc.); the Edit menu sets frame order, display speed, and audio control; Animate provides the means to move about the animation by frame by frame—in slo mo too! The pencil test feature is found here as well.

The Tools menu provides fundamental drawing tools such as box, line, circle, and a few more. It is not intended to be a full-featured drawing package; that's what *Photon Paint* is for. Instead it's meant for cleanup work and rough sketches. *Cel* can be set to work in overscan mode for lo, medium, interlace, hi, HAM, and HAM interlace graphics modes.

Finally, the Color menu lets you select from a maximum of 32 colors at a time. Though *Cel* can manipulate HAM images, the draw program cannot—the color palette being a prime limitation.

Does *Cel* live up to its promises? Absolutely. If Chuck Jones and Co. had this, my collection of Warner Bros. cartoons would be 12 times its current size. (We're planning to use it for animated sequences in an upcoming wedding video.)

Photon Cel Animator is a professional-quality product at an amateurish price. I just wish MicroIllusions would provide better manuals. An index would be nice for starters.

AEGIS AEGIS

Two, two, two programs at once; or, an Aegis doubleheader. Either way you slice it, *VideoScape 3D* Version 2.00 and *Modeler 3D* pack a tremendous one-two punch. Ad agencies, designers, media production facilities, and other creative agents will find nearly unlimited uses for these programs; the overriding benefits being extreme cost effectiveness and relative simplicity.

Modeler, $99.95 suggested retail, provides the means to create simple or complex (Cadlike) three dimensional objects. Minimum requirements for this non-copy protected program are 1 meg of RAM and one floppy drive, though Aegis recommends more memory and a hard drive. The advice is good and should be taken—if (at least) adequate performance is desired.

Besides the ability to generate 3D objects, *Modeler* can three dimensionalize any object created in *Aegis Draw, Draw Plus*, or *Draw 2000*. The process to extrude (extend or add) the third dimension is simple to the point of idiocy.

Modeler is a sophisticated, capable piece of software. A clear multiview screen layout and multifunction tools (point

or polygon mode) add up to flexible power. However, unless you are used to working in three dimensions, be prepared for disorientation, confusion, and possible (probable) frustration. This is not a problem with *Modeler*, just a need for novices to get their spatial bearings. Recognizing this, Aegis wisely included an Appendix entitled "Thinking in 3D." It's a great primer for two dimensional (spreadsheet) types.

A clear, well-illustrated manual with comprehensive tutorials leads the way for the less experienced. Several chapters detail each type of command, from add polygon and merge points to scale and lathe. Other sections cover input/output procedures and a veritable host of display commands. Advanced tips, keyboard commands, and an index round out the important documentation features.

Modeler performed without a hitch during its trial period, despite my innate ability to wreak Murphy's Law on unsuspecting programs.

One good turn deserves another, so let's take our 3D images into *VideoScape 3D* 2.00 and animate them! (Spreadsheet types usually stay with one of the *Aegis Draw* packages and extrude the third dimension in *Modeler*. Cowards.)

For Amigaphiles familiar with VS 1.0, be prepared – 2.00 is head and shoulders above its predecessor. New features include a special effects HAM mode, transparent colors, reflective chrome (HAM mode), Halfbrite chip support, maximum overscan, additional light sources, PAL support, and more. Several bugs were also fixed in the process.

VS allows you to move (animate) three dimensional objects along specified paths (via motion files), provide and change illumination sources, and view said objects from different angles (cameras). Two separate utilities help create and edit objects for use in *VS*. It needs 512K RAM and one floppy to run, but once more, additional RAM increases functionality and performance.

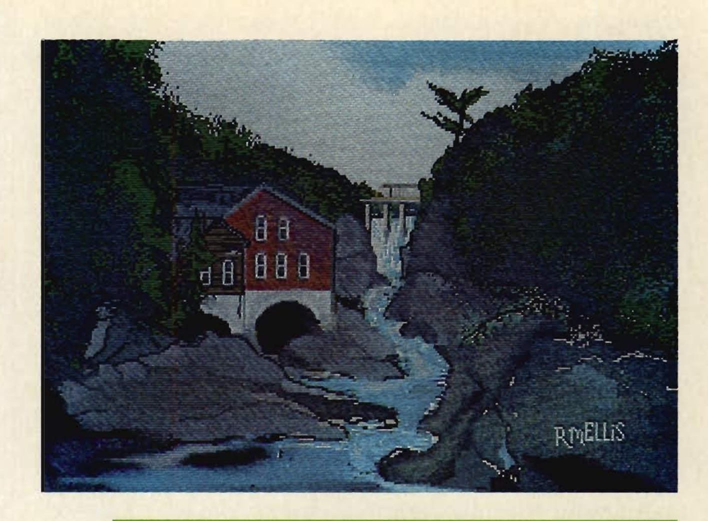
Unlike the easy to understand and learn interface in *Modeler, VideoScape's* "Control Window" is a confusing, non-intuitive, full-screen display. Though it is divided into "supposedly" logical groupings, there is no apparent rhyme or reason for the placement order, the polyglot variety of gadgets, and the lack of pulldown menus. If *VideoScape* weren't such a solid performer, people would be screaming about this "Twilight Zone" interface.

The manual comes in two parts, the 1.0 User's Guide and a 2.00 addendum. A multitude of discrepancies in the original manual are corrected via a double sided errata sheet. Despite the inconvenience of 2.0 features being explained in a separate volume and the numerous corrections, the manuals earn points for clarity, detail, and useful illustrations.

VS prospers despite being a loose collection of related routines centered around a core program with a confusing interface. There are several reasons for this success – the Amiga's multitasking overcomes the "loose collection" drawback, its powerful features overshadow the interface, and the link from *Modeler* adds a better method of object creation.

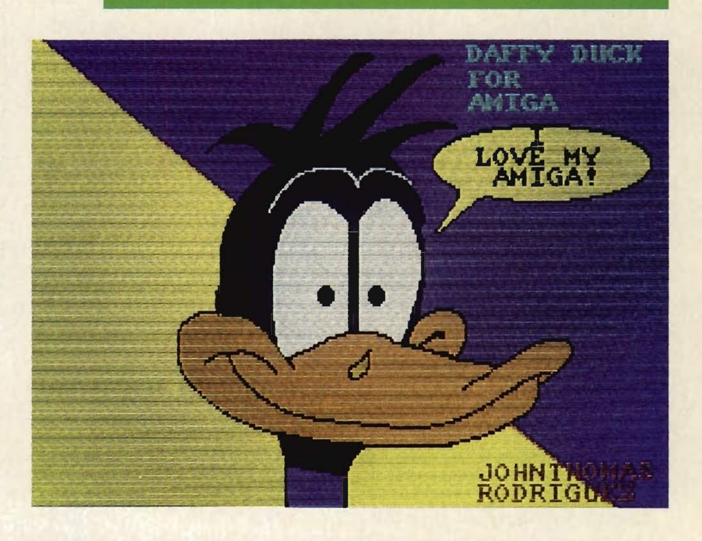
Next month we'll take a look at two great books from Abacus, *AmigaDOS Inside & Out* and *Amiga Disk Drives Inside & Out*. Both contain useful information for nontechnical types, as we'll see. By then a few other programs will also be ready for review. Until then.... □



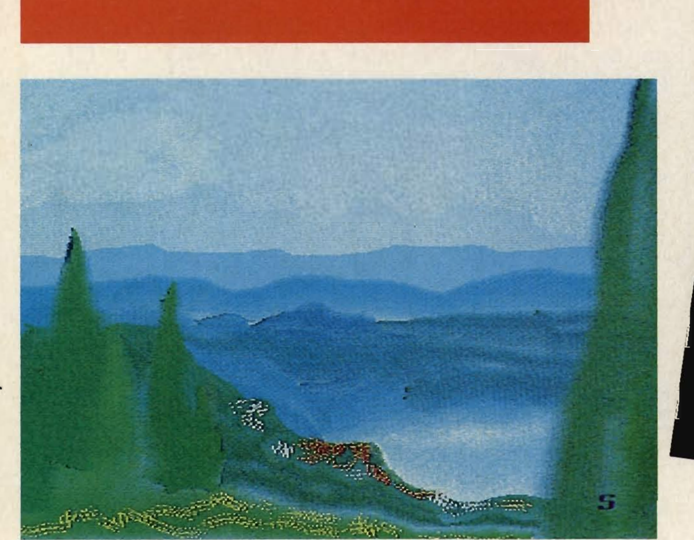


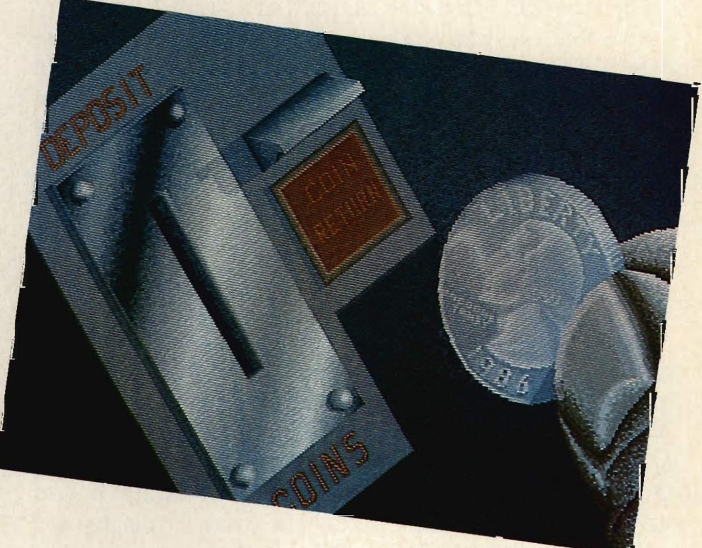
The *Art Gallery* offers the opportunity for fame and fortune to aspiring Commodore artists. Send your work on disk to *Art Gallery,* Ion International Inc., 45 West 34th Street—Suite 500, New York, NY 10001. Label each disk with the date of your submission, your name and address, the number of images on the disk, and the graphics or paint program used. Graphics produced on the Amiga are eligible for inclusion in *Ahoy!'s AmigaUser;* C-64, C-128, and Plus/4 images are eligible for inclusion in *Ahoy!* If your image is published, you will receive a free one-year subscription. Current subscribers will have their subscription extended by one year.

Note that the *Art Gallery* is not a contest. Published pictures are selected in an arbitrary and capricious fashion by the Art Director, based solely on their artistic merit.









Top to bottom, facing page: ***St. George N.B.*** **by Robert M. Ellis (Ville LaSalle, QUE), drawn in hi-res with** ***Deluxe Paint II*** **and** ***Digi-Paint;*** **computer quacker** ***Daffy Duck*** **by John Thomas Rodriguez (New York, NY), in low-res on** ***Deluxe Paint;*** **and the home of Daffy's competition,** ***Walt Disney World,*** **by Scott White (Lancaster, CA).**

Top to bottom, this page: there's no calcium, but plenty of silver and gold, in ***Blue Milk*** **by Terry Lowe (Vancouver, BC), drawn in hi-res on** ***Deluxe Paint; Springtime Smokies,*** **drawn in (smoked?) HAM mode on** ***Digi-Paint*** **by Glenn B. Stevens (Melbourne, FL); and a neglected but indispensible part of every arcade game—*****Slot*** **by Dewayne Stauffer (Pocatello, ID), in low-res on** ***Aegis Images.***

MS-DOS MEETS AMIGADOS

Part III: Delving Deeper

A〉 

By Ted Salamone

As promised in the last column, we'll cover the balance of Amiga menu commands available on the MS-DOS side of the house. Then we'll look into using the A1010 3.5" floppy drive as an MS-DOS 72K floppy, discuss file transfers between ADOS and MS-DOS, and wind up this installment with a deeper understanding of MS-DOS batch files.

DISPLAY

Display is not only the final menu heading, but it is also the one you will use most frequently during daily MS-DOS sessions. It comprises a total of 13 commands.

FULL-SIZE WINDOW and SMALL-SIZE WINDOW are related. The first produces a color or monochrome display of 80 columns by 25 rows, automatically hiding the scroll gadget border in the process. SMALL... reduces a full sized window to the same size as its last less-than-full proportions.

The next two commands are not only related as well, but they also have mouseclick alternatives. SHOW BORDER makes the top/bottom and side border visible—essentially so you can use the mouse to scroll. Unfortunately the border also covers a line at the bottom of the display—a working line. Because the MS-DOS prompt is often hidden beneath the border, I usually invoke HIDE BORDER to present a borderless full size (or partial display). Life is so much easier when you can see the prompt.

If going to the menu is too much every time you want the border on or off, merely double click the left button inside the MS-DOS display. This will resize the display and reverse the current border setting.

Now for the sci-fi stuff. WINDOW FREEZE (not to be confused with TASTEE-FREEZ) puts a hold on all processing in the MS-DOS display. By opening another window you can compare contents. For example, before downloading a large file, you may want to compare the contents against a file already on your hard drive. This is an easy way to make a visual check without running up the connect charges to download the entire file.

OPEN ANOTHER WINDOW. (My wife says that to me all the time.) This does what it says—opens another display in either mono or color mode.

THIS WINDOW'S SCREEN merely moves the MS-DOS displays to a separate window, as opposed to sharing the Workbench display. Sharing the screen makes Workbench access easier, but not by much. (I don't bother with this command.)

The COLOR command provides a slidebar display so you can tailor the display's window to your heart's content. Using the mouse and the left button, adjust the R(ed), G(reen), and B(lue) values. Then you go to the SAVE SETTINGS command under the Project menu to write the data to the Workbench. Next time you power up, MS-DOS screens will reflect the new color settings.

To make immediate changes, adjust the sliders and click on the OK gadget. Two other gadgets allow you to CANCEL the operation or COPY the current display color to one of the RGB sliders.

SET CURSOR BLINK RATE makes the little rectangle pulse .5, 1, 2, or 4 times per second.

REFRESH DISPLAY is an option I haven't had to use. It redraws the screen, ostensibly to clear up any display inconsistencies.

The next, NUMBER OF TEXT COLORS, is interesting because it goes beyond standard MS-DOS capabilities. To most PC's, monochrome displays mean one color; not so the Amiga's MS-DOS version. The PC mono mode has 2 or 4 color options, the former being one for text and one for background. Color adds two more foreground hues.

In the "real" color mode, you can choose between 2, 4, 8, or 16 rainbow tints. (Text alone is affected; graphics depend on the graphics driver in the particular software.)

The number of colors does more than decide what you will be looking at. More colors means more processor overhead; therefore, slower response time. Also, if the number of colors on the MS-DOS screen equals those on the Workbench screen, then the MS-DOS display will be a window on the Workbench display.

SET DISPLAY TASK PRIORITY provides a priority range (+10 to −10 in 5 unit steps) for task execution while INTERLACE toggles the Amiga interlace mode on and off.

That's it for menu options; now we'll move onto the cha-

meleonlike nature of the A1010 3.5" floppy drive. (To say nothing of the A1020.)

880, 720, 360, HIKE, HIKE

You can tell this was written during football season. How else can one account for the curious array of numbers above? Amiga floppy drives, you say? Well, let's check this rumor out.

Sure enough, my trusty, tried and true A1010 has a side I never knew. Its split personality makes it work like an MS-DOS 720K floppy drive when connected to the Bridgeboard. That means I can have a 5.25" or a 3.5" MS-DOS floppy installed. Hmmmm.

Other than physically connecting the drive to the Bridgeboard, you needn't do anything else. The A1010 will automatically read and write MS-DOS formatted files.

Moving on, most people know that the A1020 Amiga 5.25" drive is designed to read/write MS-DOS 360K file formats. What they may not know is that it can be connected to either side of an Amiga 2000. That's right, Bridgeboard or Amiga–it doesn't matter. The drive will still handle the 360K MS-DOS format.

How does the Amiga side read the MS-DOS files, you ask? The answer, dear reader, is on the Extras disk. You know, the one at the bottom of the closet, or more likely, reformatted when you desperately needed a blank disk. Hope it's still around.

FLIP/FLOP

Flip from side to side, and flop back again. All through the computer wizardry of this remarkable machine and two simple commands. ARead, resident on the MS-DOS disk, copies an AmigaDOS file to an MS-DOS file. AWrite, with the same address, works in reverse.

Neither command works unless PCDisk has been activated from the Workbench. These files can remain on the MS-DOS floppy, or be moved to an MS-DOS hard drive for faster access and execution.

The command syntax is extremely simple. The results are readily apparent, and quite useful too. There's only one problem with these commands–the MS-DOS wildcard capability isn't supported. That means multiple files have to be transferred one at a (painstaking) time. Another great concept stillborn. Rumor has it that DOS 1.3 will alleviate this burden.

MS-DOS BATCH FILES

There's more to MS-DOS batch files than previously discussed. Without going into great detail, we'll cover the commands and use of variables. With these relatively simple tools and a little experimentation, you'll be able to build interactive DOS shells (a poor man's text-based Intuition is the closest analogy), and generally automate repetitive–though slightly different–tasks.

First, the commands. REM, as in BASIC, prefaces a non-executing comment or remark. This internal documentation refreshes the original programmer as to the file's function while serving as a handbook for others. As with all programming, it is best to leave a good ratio of REM's (1 per 5 or 10 lines) to working code.

PAUSE does just that–it temporarily halts execution of the batch file. An informational phrase, displayed on the monitor, can follow. Try the following batch file, and then we'll move on to the other commands. (After entering, execute it by typing NEWDISK.)

```
REM       This file verifies new disks
REM       It is NEWDISK.BAT
PAUSE     Insert scratch dish in drive A:
FORMAT A:
DIR A:
CHKDSK A:
```

ECHO toggles the display of batch files on or off. If you want to see each line execute, use ECHO ON. An optional message line can follow the command; without such a message all lines appear onscreen until an ECHO OFF is encountered. If secrecy or an uncluttered approach is called for, use ECHO OFF.

For processes a command for each value in a variable set; GOTO finds a specific label (e.g., line numbers in BASIC) and continues executing from that label. IF is a straightforward conditional statement sometimes used in conjunction with NOT.

By using the SHIFT function more than 10 variables can be used in a batch file. Remember, these files must end with the .BAT extension; but to execute them, do not type the .BAT extension.

Type this file, and execute and alter to learn the basics of MS-DOS batch processing with variables, et al. This file can be pared down, turned into tighter code that still performs the same tasks. Now there's a manageable challenge for you.

```
ECHO OFF
REM This file is CHALLENGE.BAT
ECHO ON
REM This will set number of variables   10 and copy files
REM to a specified directory.
:A
IF "%1" = " " GOTO B
SET todir = %1
SHIFT
COPY %1 %todir%
GOTO A
:B
SET todir=
ECHO All files copied
REM The next line will format the disk, making it bootable.
FORMAT A: /S
IF errorlevel 0 GOTO end
ECHO An error occurred, the disk may be defective. Please retry.
REM The next line allows you to replace the disk, if need be.
PAUSE Please insert new disk in drive A:
FORMAT A: /S
ECHO An error occurred, the disk may be defective. Please re-run.
IF errorlevel 0 GOTO end
:end
ECHO Batch processing completed.
```

Next installment, we'll do mini-reviews on MS-DOS software tested in the office. □

AMIGA TOOLBOX



Send your short routines and programming or hardware hints to *Amiga Toolbox*, c/o *Ahoy!'s AmigaUser*, Ion International Inc., 45 West 34th Street–Suite 500, New York, NY 10001. Include the program and source code on a 3½" disk, along with documentation and a printout. If programming in a language other than Amiga BASIC, specify the compiler used and the manufacturer.

FILE RECOVERY

Every so often AmigaDOS fails to create a file properly. It's easy to recognize the problem–when you LIST the file it's "empty." It's easy to recover the data in an "empty" file. Just TYPE the file and redirect the output to a file. Here's how it works:

```
TYPE>RAM:TEMP BADFILE
```

This creates a file in RAM: called TEMP. TEMP contains all the recoverable data in BADFILE; it also has the right number of bytes (i.e., it's no longer "empty") when you LIST it. This works for files that are corrupted by a "guru" visit, too.

–Kevin J. Ziese
San Antonio, TX

DPAINT II FAST SCROLLING

In your recent review of *Graphics Studio* from Accolade you mentioned that it would allow you to scroll around a page much faster than any other paint program you've seen. I'm almost positive you've used *DeluxePaint II* for the Amiga, and since you seemed to think it slow in scrolling I thought you might not know the secret of fast scrolling in *DPaint II.*

Go into *DPaint II* and create a page that is larger than the screen. To move around quickly, put the cursor/pointer in the bottom right corner of the drawing area (do NOT put it in the "Tool Palette"). Now press "n" (lowercase n) a few times. It should only take two or three presses to get the bottom right corner of the "page." How's that for fast!

An explanation: Pressing "n" centers the screen around the area that the cursor is over when you press it. It works in and OUT of magnify mode. If you want to get another part of your "page" quickly just move the cursor to the edge of the drawing area in the direction you'd like to scroll and press the "n" key until you get there. You can scroll in smaller increments by putting the cursor closer to the center of the screen. In magnify mode, say you were editing the mouth of a face and you want to edit the eyes now. If you can see the eyes in the magnified area, just put the cursor over the eyes and press "n" and they will be centered in the magnified area. If you cannot see them in the magnified area, but you can see them in the UNmagnified area on the left side of the screen, just put the cursor over there and press "n" and the eyes will be centered in the magnified area.

Hopefully you will now be much less frustrated when editing a large page.

–Gregg Tavares
Los Angeles, CA

DPAINT II PERSPECTIVE FILL

Another trick with *DeluxePaint II* that your readers might not know about is one of the uses of "perspective fill." I find it fun to make a small shape, grab it as a brush, pick Perspective Do and change the perspective to something like 60,15,00 and then select fill screen. But, what happens when I want to fill a page and not a screen? Well, instead of picking fill screen, I bring up the Fill Requester by pressing SHIFT-F and then I pick "Perspective Fill." Now I can fill the screen (or an area) by using the fill tool, the solid rectangle tool, the solid circle tool, the solid ellipse tool, or the solid polygon tool. I can fill adjacent areas of the picture and the "perspective" will all match up. Obviously you can do some pretty weird things with "perspective fill," but if you want to fill the page (especially an overscan page) you can use the rectangle tool (or the fill tool) to fill the part of the page you can see, then you can scroll to the unfilled parts and fill just those parts. If you used the fill screen option on the perspective menu, it would redraw the entire screen each time instead of just the parts that were not drawn yet. (Try it out if you don't follow me.)

You can also Resize a Picture and Rotate it with the Perspective tool, and depending on your palette you will often get better results than if you use the regular brush tools. Pick up a brush and then pick Perspective Do from the menus. Now use the '1' and '2' keys ON THE KEY PAD to rotate the shape. The Semi Colon Key (;) and the Single Quote Key (') will "size" the brush bigger and smaller. Pressing SHIFT-(;) and SHIFT-(') will change the size in much larger increments. You can even resize it much larger than the screen, but if you do you will have to use some of the techniques mentioned above to view all of it (i.e., Use Perspective Fill). Now select Anti-Alias High from the menus and then stamp your brush somewhere. It will take a while, but *DPaint* will now rotate and/or resize your brush and Anti-Alias it, which means it will blend pixels together where necessary, unlike the regular brush tools which would just throw some pixels away.

When you need to change a color in a complex shape, I see many people select the fill tool and then they fill each tiny part of the shape with the new color "by hand." A much faster way is to select Stencil Make from the menus, click on Clear, and then the color you want to change. (You can click on the color in the Stencil Requester or in the Picture.) Now click on Invert and then on OK. Now you can only draw on the color you are trying to change, so pick the color you want to change to, then pick the solid rectangle tool and draw over your shape. Only the color you are trying to change will be replaced with the new color. To make the *DPaint II* allow you to draw anywhere again, press the Tilde key (just above the Tab key). The Tilde key toggles the stencil on and off. A stencil takes some memory, so if you need more memory you can Free the stencil from the menus.

I hope these tips will help you to use *DeluxePaint II* more efficiently.

–Gregg Tavares
Los Angeles, CA





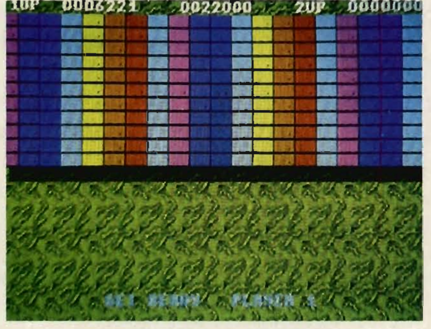
The sheet stones that form most of the Amegas *playfields do not appear flat against the background, but rather are slightly angled and brought forward to create an illusion of depth.*

AMEGAS
DigiTek
Amiga with 512K
Disk; $34.95

It's wall-bashing time again! For at least five years, there were no new games which built on the concepts introduced by Atari's *Breakout.* This ended when the success of *Arkanoid* in the coin-op arcades revealed a market for games in which the player destroys bricks by hitting a ball against them with a horizontally movable paddle. The delay in the publication of home versions of *Arkanoid* left a software gap which several publishers are busily, and profitably, filling.

Updating a classic play mechanic, as DigiTek did with *Power Styx*, is certainly legitimate. However, *Amegas* seems uncomfortably similar to *Arkanoid*. The special powers aren't exactly the same, and the graphic treatment is also a little different, but *Amegas'* dearth of originality is obvious to anyone who has played *Arkanoid.*

The player employs the mouse, plugged into Port 1, to dismantle 40 walls one stone at a time. The player moves the paddle to the left and right to hit the ball before it can exit the bottom of the screen. The player begins with three "lives," but eliminating a yellow stone earns an additional one. On the other hand, stones marked with a skull and crossbones instantly kill any ball that hits them.



The basic building block of most of the playfields is the sheet stone. Some have two or more dots on them, which means it takes that many hits to remove them from the screen.

A collision with the ball doesn't destroy Survivor stones. They generally make it hard to get at ordinary stones hidden behind them.

Fortunately, two other types of stones help the computerist circumvent this seemingly invincible barrier. Spreader stones split into more stones instead of disappearing when hit, and they can burst through a wall of otherwise impregnable survivor stones. Jumper stones, identified by an arrow, move up the screen each time the ball strikes. If the jump takes them through a survivor stone, the jumper stone neutralizes it.

When the competitor removes certain stones, colored stones tumble toward the lower edge of the display. Depending on its color, each confers a specific extra ability if caught by the paddle. Pressing the right mouse button activates the latent power.

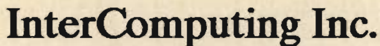
Needless to say, these power stones make it a lot easier to clear some of the trickier playfields. They can enlarge the size of the paddle, slow down the game, split one ball into three, catch and aim the ball before launching it at the stones, fire a cannon, or even advance immediately to the next highest level.

Amegas employs the same graphic design concept as *Arkanoid* but actually carries it off more effectively. The stones are not flat against the patterned background, but rather are slightly angled and brought forward to create an illusion of depth. This visual treatment makes it look like there's a solid wall on the screen, not just a multicolored mosaic.

Like all DigiTek titles, *Amegas* is



Paladin *provides a breath of fresh air in the fantasy role playing field. Each quest has its own situation and victory conditions. A status screen monitors progress.*

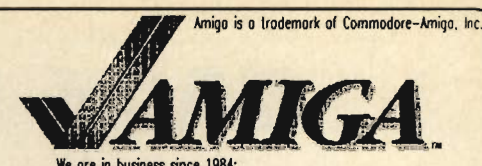


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Circle #178 on Reader Service Card

beautifully programmed, with excellent art and sound. When this publisher lavishes as much care on the content of the game, the results should be truly awesome.

DigiTek, Inc., 10415 N. Florida Ave., Suite 410, Tampa, FL 33612 (phone: 813-933-8023). *–Arnie Katz*

Circle #121 on Reader Service Card

PALADIN
Omnitrend Software
Amiga with 512K
Disk; $39.95

Sometimes it seems like all fantasy roleplaying games use the same system. The similarities among *The Bard's Tale, Might & Magic,* and *Advanced Dungeons & Dragons: Pool of Radiance* are more numerous than the differences.

Those who are tired of the repetition should cheer the debut of *Paladin.* Thomas R. Carbone and William G.M. Leslie III, who did *Breach* last year, have further refined the system and adapted it to the demands of a fantasy setting. This innovative game system is a badly needed breath of fresh air.

The adventurer employs the mouse to individually issue movement and activity orders to each member of the party. It is possible to move all, some, or none of the nine heroes during each turn.

Movement points (MP) regulate how much a character can do each turn. Each type of terrain requires a different amount of MP to enter, and activities like swinging a sword or casting a spell also cost MP. During movement, a stop sign replaces the standard cursor when that character's MP is exhausted for that turn.

All movement takes place in the large playfield window which occupies about 60% of the screen. The modified overhead perspective view shows the area immediately surrounding the party. The characters are depicted from the side, which makes them easier to distinguish.

A strip of icons across the lower portion of the display controls activities like taking, dropping, or using objects. Opening doors, climbing or descending stairs, fighting with sword or spell, and expanding the scope of the modified overhead view of the current lo-

cation are also controlled by clicking on icons. Where necessary, a menu window appears in the upper right corner to facilitate further choices.

The program rates each player for six key attributes. These are: vitality, health, encumbrance, accuracy, detecting, and seeing.

Vitality measures a party member's energy. It declines during periods of strenuous activity, but can be restored quickly with rest.

Health measures the amount of damage taken during the quest. If it drops below 50%, the character becomes vulnerable to the possibility of a single killing stroke.

Encumbrance determines the character's carrying capacity. Heavily loaded people move more slowly and are juicier targets for the enemy. Accuracy governs combat skill. It affects both sword fighting and spell casting.

Detecting and Seeing are related to magical devices. They tell how well the character uses, respectively, a wand of detection or a ring of farsight.

Every party is led by a paladin. Brandon, a sample, is ready to use when the user boots the disk, but the Quest Builder modules can create an unlimited supply of new ones.

Swordsmen constitute the majority of most parties. They do the bulk of the fighting and have a high degree of mobility.

Rangers wield a sword, but they can also employ some magic spells. These lightly armored characters can cast incantations to detect secret doors, become invisible, confuse enemies, or increase speed.

Thieves are as lightly armored as Rangers, but carry a lighter blade. Their elusiveness makes them relatively hard to damage.

Mages can call upon the power of magic in battle. Besides the spells which are also available to the Ranger, a Mage can throw a fireball or stun the mind of a foe.

Arrayed against the player are fighters, dragons, trolls, zombies, sorcerers, and spirits. The exact composition of the enemy force varies according to which of the 10 quests is underway.

Each quest has a unique situation and set of victory conditions. The computerist deploys the party from the entry pentagram and tries to satisfy the conditions for winning. A status screen monitors progress toward the goal. Some quests automatically link to other quests, and the user can voluntarily connect scenarios, if desired. The Quest Builder provides a simple system for inventing new quests. A flyer supplied with *Paladin* offers an additional scenario disk.

Paladin shows that Carbone and Leslie are poised to join the elite of the adventure game design world. The multiple scenarios and Quest Builder module make it an outstanding value as well as an engrossing and satisfying gaming experience.

Omnitrend Software, P.O. Box 733, Simsbury, CT 06092 (phone: 203-658-6197). *—Arnie Katz & Bill Kunkel*

Circle #120 on Reader Service Card

SKYFOX II
Electronic Arts
Amiga with 512K
Disk; $39.95

The Xenomorphs are back! The aliens who menaced the earth in *Skyfox* return to the attack in this sequel by the same Dynamix development team that created the original hit. The first game was a flight combat simulator, but the war against the Xenomorphs moves to deep space in *Skyfox II.*

The Federation's new craft makes the fighter plane of *Skyfox* look like a Sopwith Camel by comparison. Skyfox II cruises through space at speeds up to 9000 kilometers per second (kps). Its chief weapons are a neutron disruptor, photo bombs, and anti-matter minds. Defensively, the Skyfox II has shields and can use a deceptor to confuse the enemy.

Although mouse or keyboard order entry can be used, *Skyfox II* is intended to work with a joystick. Pushing the stick forward causes the ship to climb, and pulling it back initiates a dive. The Federation goes left or right in response to the corresponding movement of the joystick.

The captain navigates manually or employs the autopilot. After picking a destination on the overhead view window, the autopilot flies Skyfox II there automatically to engage the enemy.

So-called "wormholes," byproducts of black holes, are like expressways between various locations in the Cygnus star system. Sometimes Xenomorph raiding parties wait at the exit of wormholes to ambush the unwary.

The joystick's action button fires the neutron disruptors, but other weapons and all devices are activated with single keystrokes. The summary contained in the documentation is more than adequate for beginners, who will quickly memorize most of the commands.

Docking with friendly starbases allows the player to recharge the ship's nuclear cells, replenish weapons like mines and bombs, and repair damage. If the computerist pushes the "R" (for repair) key, a schematic of the ship appears on the main screen. Partially damaged sections are yellow, while disabled ones are red. Moving the pointer onto a section in need of repair and clicking restores full functionality.

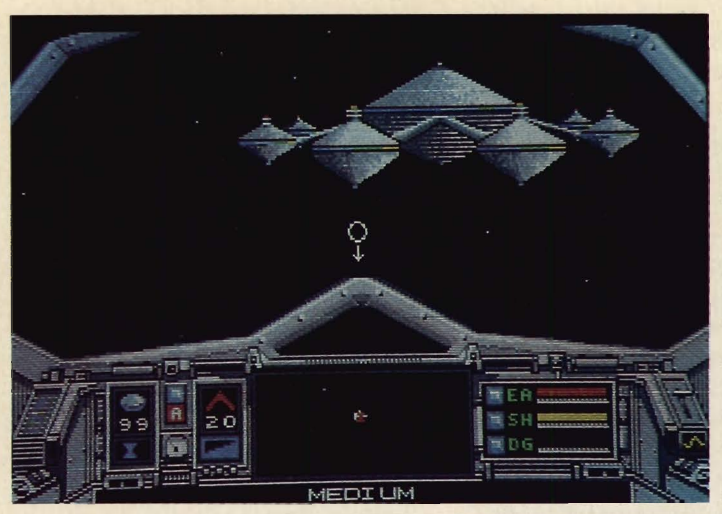
Docking presents no particular difficulty, but it brings the player squarely up against the program's only major flaw. When the star base locks onto the Skyfox II, the overhead display appears with a starbase indicated. The player finds the name of the starbase on the map supplied with the program and types its code to continue the game past that point.

This is the anti-piracy scheme. The map is printed in dark blue on bluegrey to prevent photocopying. It successfully foils potential software thieves, but it is extremely hard for legitimate owners to read. An essential part of the game should not be so difficult to use. It mars an otherwise excellent product.

The lapse is surprising, since one of *Skyfox II's* strengths is its graphics. Few games convey the sensation of traveling at great speed more impressively. Dynamix has not coasted since *Skyfox*, and the sequel is superior visually in almost every respect.

The preflight screens allow the user to select one of the 10 scenarios, pick a level of difficulty, review the Skyfox II's specifications, and get a mission briefing. These displays, as well as the ones which summarize the results of the mission and rate the pilot's performance, look great and present all the options and reports concisely.

The map problem prevents an unqualified recommendation for *Skyfox II.*



Few games convey the sensation of traveling at great speed better than Skyfox II. *The new craft makes the fighter plane of the first* Skyfox *seem like a Sopwith Camel.*

It would be a solid nine (out of ten) if not for this handicap. Even so, those who don't mind a little squinting will reap the rewards of a fast-paced, exciting combat simulator.

Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404 (phone: 415-571-7171). *—Arnie Katz*

Circle #122 on Reader Service Card

BETTER DEAD THAN ALIEN
Discovery Software
Amiga with 512K
Disk; $34.95

Was it really a decade ago that the sound of marching alien feet first filled the nation's coin-op arcades? *Pong* created the computer gaming field, but it was *Space Invaders* which turned it into a pop culture craze.

Space Invaders was a tremendous hit as a coin-op, a videogame cartridge, and a computer program. It spawned a whole genre of invasion games which includes such classics as *Galaxian, Centipede, Sneakers, Phoenix,* and *Gorf.*

Better Dead Than Alien is more than just *Space Invaders* with new sound and graphics. Any knowledgeable gamer can spot the influences on Jason Kingsley's tribute to invasion games, but it is not quite like any one existing title. Instead of just updating the visuals and adding some bonus objects, the author has analyzed invasion games and picked some of their most entertaining features in *Better Dead Than Alien.*

The mouse, keyboard, or joystick manipulates a ship which fires up the screen at a variety of hostile creatures. Depending on which of the 40 waves is in progress, there is a variable amount of vertical movement. On the meteor screen, which is reminiscent of *Asteroids,* the player can range freely over the entire playfield, but movement is much more restricted against tightly bunched formations of monsters.

Aliens range from almost cute little creatures to gigantic tentacled horrors which fill up a quarter of the screen. They are particularly vulnerable if their eyes are glowing green when hit, but otherwise take several shots to kill.

An alien which dies while its eyes are green drops a power capsule. The player can gain extra powers or recharge the power bar by catching the capsule before it drops off the bottom of the playfield.

The nature of the extra ability depends on which icon, if any, is lit in the bank of eight located in the lower right corner. Powers include scatter bolts, automatic rapid fire, saturation barrages, armored missiles, shields, a clone ship, stun blasts, and a neutrino "smart" bomb. The special ability expires at the end of a wave, unless the capsule is acquired from the last creature on the screen. In that event, it carries over to the next wave.

The playfields wrap vertically. This means that when an alien disappears off the bottom of the screen, it soon reappears at the top. Some levels add horizontal wraparound for even more frenzied combat action.

The artwork is impressive, even for the Amiga. The aliens are well drawn in great detail with lots of animation. Digitized sound provides feedback for every aspect of the game from killing a creature to losing one of the gun's three lives. *Better Dead Than Alien* has the wildest collection of human sighs and yelps you've ever heard, as distinctive as *Space Invaders'* military tromp.

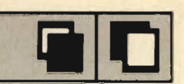
The instruction folder is perfunctory, even for a British-designed game. The black and white comic book included in the package isn't anything special, either. But it is the game itself which counts, and *Better Dead Than Alien* is the most purely entertaining program published for the Amiga in the last six months.

Discovery Software, 163 Conduit St., Annapolis, MD 21401 (phone: 301-268-9877). *—Arnie Katz & Joyce Worley*

Circle #119 on Reader Service Card



More than just Space Invaders *with new sound and graphics,* Better Dead Than Alien *incorporates some of the most entertaining features of the invasion game genre.*



Understanding and Using the Command Line Interface

SECURITY MEASURES

By Richard Herring

Computer security is a broad topic. It can mean anything from stopping hardware theft to preventing a competitor from accessing your data. Most Amiga owners don't worry about spies (as government agencies may) or about someone "undeleting" data on a diskette (as a business undergoing an IRS audit may).

Each of us has to worry about the security of our Amiga on a different level, however. Once we have entered data–whether it's a spreadsheet, term paper, or database of record albums–we do not want that data erased or modified by someone else or, inadvertently, by ourselves.

Anyone who uses his Amiga in business will be particularly sensitive. When the disk with the inventory is accidentally corrupted, or one of the kids' friends innocently copies a killer game in development, your business can suffer. Mistakes happen. But we can plan for them and, in the process, even prevent simple malicious mischief.

Some security measures don't involve AmigaDOS, but they are so simple, they deserve mention.

1) Make a backup copy of any disk that you can't afford to do without. This applies to commercial software as well as to your data. Too many magnets, spilled drinks, and misplacing gremlins roam the world to think any disk is sacrosanct from harm.

2) Store your backup copies away from your computer. In a closet at the other end of the house or at a friend's house will do. The storage environment should be dust free and 50 to 100 degrees. Then your data won't be lost to even a major catastrophe (like the tree that visited my den during a hurricane three years ago).

3) Always label your disks clearly. It is too easy to grab a "blank" disk, only to remember later that it contained the last two years of tax files.

4) Write protect any disks you can. Most commercial software should stay write protected after the program is first configured. Even some of your data disks can be write protected once they are full, or if you don't need to update the files any more.

5) When two or more people work with the same program, they should each have their own data disk. Sharing a data disk to save a buck or two is an investment in strife.

6) Use the same boot disk as consistently as possible. Then you won't have to remember whether a particular boot disk contains commands that could be dangerous–like RENAMEd or ASSIGNed shorthand commands for FORMAT, DELETE, or COPY.

7) If someone else will use your Amiga only on rare occasions, you can make him a special boot disk, labeled with his name, that does not contain the FORMAT, DELETE, or DISKCOPY commands in the :C directory. But you'll still have to watch out for LOABWB and its "discard" selection, which can erase a file that has an icon even if DELETE is not on the disk.

8) Don't use a data disk that's close to full. It should have at least twice as much free space as the largest file you'll be creating.

Although you cannot protect a disk from accidental reformatting (except by smashing out the write protect tab), you can protect individual files from being deleted or overwritten. The AmigaDOS PROTECT command is just the ticket.

Whenever you list the files on a disk, you get five pieces of information about each file–the filename, its size in bytes, its protection status, the date and time of its creation, and any comment attached to the file. Let's first look at the protection status. This will appear as up to four letters–r (read), w (write), e (execute), and d (delete).

As of AmigaDOS 1.2, you can forget about protecting files from being read (r) or executed (e). These flags, while they can be set, will have no effect. But for our purposes here, being able to protect our files from being deleted (d) or written to (w) is what we really want.

Probably all your files, whether they are programs or data, will show all four flags (rwed) when you LIST them. That means none of the flags are set. Try typing:

```
PROTECT FILE yourfile FLAGS re
```

Then LIST your files. You'll see that "yourfile" now shows "r-e-" as its protection status.

Just to be sure, type:

```
DELETE yourfile
```

Your Amiga responds:

```
Not Deleted – Error code 222
```

Now load "yourfile" into your word processor or ED, make some changes, and try to save it. No again. That file is safe from accidental deletion (d) or modification (w).

Note that you do not have to type the full PROTECT command above. The keywords FILE and FLAGS are optional. As a matter of fact, AmigaDOS may prevent you from using the keyword FLAGS. If you want to set all your flags, you would type:

```
PROTECT FILE yourfile FLAGS
```

AmigaDOS will try to interpret the word FLAGS as the actual flags (rwed) and respond:

```
Invalid flag – Must be one of RWED
```

If you COPY "yourfile," the COPY process will reset the flags from "– – – –" to "rwed" for the new copy, but not touch the original. RENAME the file and its flags remain set. To manually reset the flags, type:

```
PROTECT yourfile rwed
```

One last idiosyncrasy of PROTECT and we will move on. PROTECT does not care at all about the order of the letters you type for flags. Typing:

```
PROTECT yourfile dwre
```

will reset the flags just as well as the command above. For that matter, as long as you use no letters except r, w, e, and d, PROTECT doesn't care how much you type. The command:

```
PROTECT yourfile rewwweer
```

works just fine to set only the delete (d) flag.

Another way to "protect" a file from being erased, overwritten, or even viewed, is to use international and other special characters in the filename. You type these characters by holding the (Alt) key as you type. Many people don't know how to type such characters, and those who do will have to hunt all over the keyboard to figure out which key types them.

At least two other AmigaDOS features can help to prevent you from accidentally erasing files. The first is that AmigaDOS stamps each file with the date and time of its creation. Like the file's protection status, you can see its time and date stamp using LIST.

(Of course for time and date stamping to amount to a hill of beans, your Amiga must be set to the correct time and date. You can either use the DATE command each time you boot up, or add a battery backed-up clock, typically as part of a memory board.)

Being able to see when the files on a disk were created, even though you can't remember the particular filename you need, will often allow you to pick your file. Or at least narrow down the choices considerably. AmigaDOS even provides a way to update a file's time and date stamp.

The SETDATE command allows you to restamp a file to any time and date. The syntax is:

```
SETDATE FILE yourfile DATE dd-mmm-rr TIME hh:mm:ss
```

The keywords and the time are all optional, so the simplest version of this command is:

```
SETDATE yourfile 14-MAR-89
```

Whenever I work with an important file, even though I do not update it, I like to reset its date stamp. Later, I can see that this version of the file is the last one I used and should be accurate through that date.

I have always disliked AmigaDOS' date format, probably because I usually foul it up at least once before I type it correctly. So let's see if there's not another, easier way to update the time stamp on a file to the current date and time.

When you RENAME a file, the timestamp does not change. But when you COPY a file, the timestamp is updated for the new version. We can use this information to write a batch file. Let's create the UPDATE batch file containing these lines:

```
.KEY filename
RENAME "(filename)" ZYX@.temp
COPY ZYX@.temp "(filename)"
DELETE ZYX@.temp
```

You can EXECUTE this batch file by typing:

```
EXECUTE UPDATE yourfile
```

The name "yourfile" is passed into the batch file where it is renamed, then copied back to the original name. This effectively updates its time and date stamp.

(We used the name ZYX@.temp as the temporary filename because it is unlikely to exist elsewhere. In the RENAME and COPY commands, we must use both angle brackets < > and double quotes "" around "<filename>". The brackets tell DOS to substitute the filename from the command line to that position in the batch file. And the quotes are necessary for any filename that contains spaces.)

If you didn't like the inelegance of that batch file, you could scrounge up TOUCH, by Phil Lindsay and Andy Finkel (Fish #49). TOUCH sets the date and time of a file to the current date.

Another feature of AmigaDOS that will help you remember what is in all your files is the option to attach a comment to each file. Then when you LIST your files, the comments will remind you what is in all those documents you named TEST1, TEST2, TEST3, etc. (TEST# is the filename I use for data that sometimes is and sometimes isn't important and that I never want to be able to find again. Substitute your own pet filename here.)

You attach comments with the FILENOTE command. The syntax is so simple, I'm embarrassed not to use it more often. Just type:

```
FILENOTE FILE yourfile COMMENT "So that's what's in this file!"
```

The FILE and COMMENT keywords are, once again, optional. And the quotes are only necessary if your comment contains spaces. Any character can be used in a comment, unlike filenames which prohibit the use of certain characters. However, if you want to use an asterisk (*), you will need to precede it with another asterisk. A string of six asterisks will appear in your comment as only three. A single asterisk embedded in a text string will be ignored.

Although all the books will tell you that FILENOTE comments may be up to 80 characters long, they're wrong. FILENOTE will accept a command line with a comment of up to 80 characters, not counting the quotes. But the 80th character will be truncated. Enter more than 80, or omit the closing quote, and FILENOTE will respond with an error message "Note failed" or "Bad arguments" respectively.

It's easy to tell when you reach the 80 character comment limit. A long comment will wrap to the next line as you type it. When the second line overlaps the first by three characters, you're done—like it or not.

When a file is created, it has no comment attached. Remember this rule because AmigaDOS does have one potentially nasty left hook to throw. You would assume that once a comment is attached to a filename, it's there to stay. You'd be only partly right. True, if you edit and resave a file, the comment sticks. But if you COPY the file, even to another disk or directory using the same filename, your comment is KO'd. JOIN has the same effect.

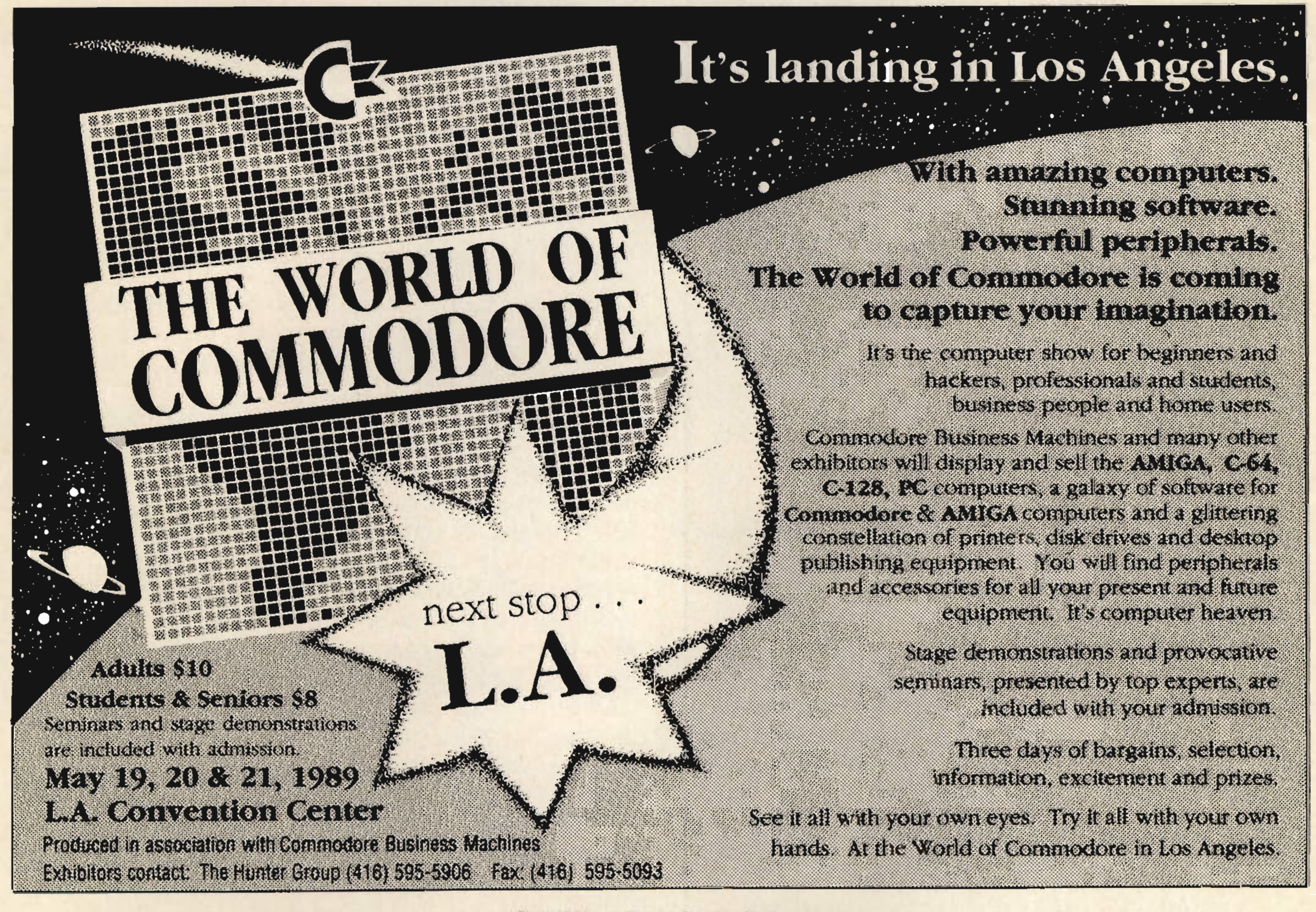
There is no simple way to edit a comment. You can't even overwrite a comment by using the FILENOTE command on a file that already has a comment. But you can delete a file's comment with:

```
FILENOTE yourfile ""
```

Let's say you have decided to add comments to the data files on a disk while the contents are fresh in your mind. Later you won't be forced to TYPE each file to remember what's in it. Who wants to type all those FILENOTE commands? Again, simple batch files can speed the process.

First create the AddFileNotes batch file to include the lines:

```
.KEY f1,f2,f3
ECHO "Add comment to <f1>, enclosed in quotes."
FILENOTE "<f1>" ?
IF "<f2>" EQ ""
  SKIP thatsall
ENDIF
ECHO "Add comment to <f2>, enclosed in quotes."
FILENOTE "<f2>" ?
IF "<f3>" EQ ""
  SKIP thatsall
ENDIF
ECHO "Add comment to <f3>, enclosed in quotes."
```



```
FILENOTE "<f3>" ?
LAB thatsall
```

This will allow you to interactively attach comments to up to 3 files at a time by typing:

```
EXECUTE AddFileNotes yourfile1 yourfile2 yourfile3
```

(Obviously, you can make this batch file longer to accommodate more files.)

That's only step one. Next create a text file of all the filenames in your directory with:

```
LIST QUICK TO filelist
```

You can edit "filelist," which contains one filename per line, to a series of lines that call on AddFileNotes. The edited "filelist" would look like this:

```
EXECUTE AddFileNotes yourfile1 yourfile2 yourfile3
EXECUTE AddFileNotes yourfile4 yourfile5 yourfile6
EXECUTE AddFileNotes yourfile7 ... And so on.
```

Commenting directory names along with filenames is no problem. You attach a comment to a directory just like you do to a file.

Since the idea here is to minimize typing, you may want to keep filenames as short as possible. Because you are now stamping each file with its date of creation and adding a comment, short filenames won't be an uninformative bother.

Securing your data can go beyond techniques to prevent accidental file erasure. You can actually "protect" boot disks from the unwitting hands of novice users. One simple method is to make your DOS boot disks appear to be password protected.

Starting with a Workbench disk or a copy of a commercial program, find the file "Startup-Sequence" in the :S directory. RENAME it to SS. Then create a new Startup-Sequence with the lines:

```
MAKEDIR RAM:C
ASSIGN C: RAM:C
ECHO "Enter password now."
ECHO ?
PROMPT ERROR
```

Last, copy the EXECUTE command to the root directory and edit the SS file to include as its first lines:

```
ASSIGN C: DF0:C
PROMPT %N>
```

What have we done? When someone who should not be booting this disk does so anyway, he will appear to be locked out. As soon as he attempts to enter *any* password, the Amiga will respond only with "ERROR" (which is actually the DOS prompt). If he tries to access any DOS command—like DIR, INFO, or LOADWB—he (and the Amiga) won't be able to find it.

You, on the other hand, have easy access. Just hit (Return) when asked for the password. Then at the ERROR prompt, EXECUTE SS. The disk will boot normally.

(You could even appear to give the user several chances to enter the correct password by repeating the two ECHO lines. Of course, this will require you to hit (Return) an extra time or two for "authorized" access.)

Obviously, this will not prevent your "unauthorized" user from booting with another disk, but it is enough to keep prying folk who are not Amiga-literate out of your disks. Whether it's a little brother who would love to edit your *Deluxe Paint* files or a prying mom who'd like to review the graphics files you've downloaded recently, this simple trick works well.

From time to time, any of us may get carried away—delusions of grandeur, the desire to raise an army or to tax and spend. In such cases, much like Big Brother, you may also feel the need to encrypt your data files. Encryption is a simple mathematical process of turning meaningful data into a garbled mass. Only if you have the key, or password, can you unencrypt the mass back into data. The government even has standards for how garbled the mass must be.

Anyway, we simple Amiga owners, in our search for security, may now encrypt our data. At least one public domain program is available. Scrambler by Foster Hall (Fred Fish #148) may not make your data quite as secure as that of the boys at the Pentagon, but then who wants a house with five walls?

Another form of data security is to *really* erase your files. When you DELETE a file, AmigaDOS allocates (or frees up) the disk sectors it occupied, but leaves your data there until it is overwritten by another file. By "unerasing" the file, someone can see your original data. A few commercial disks have inadvertently revealed some interesting things in this way.

To delete DELETEd data, you could try FillDisk (Fish #61). This program overwrites the disks free blocks to garble any data they may contain. Unlike encryption, this data is not "ungarbleable."

One last command and we'll wrap up for this month. When you COPY a file, how do you know that the copy is really the same as the original? Do you actually scan the copy, or do you follow that old rock 'n roll band—Blind Faith? Several file comparison programs, all named DIFF, are available to tell you if two files are identical. Try the version by D. Krantz, ported to the Amiga by jeff Bailey (Fish #107), or the one by Erik Baalbergen (Fish #87 and #75). If you want to compare program as well as data files, you might look at a newer DIFF (Fish #138).

What do you do when all these tricks fail and you do inadvertently delete or corrupt a file with valuable data? You have available, through AmigaDOS and shareware, a variety of tools that will allow you to recover your erased file. That topic is a column in its own right. If something doesn't make sense, or if you have discovered a better way, drop me a line at P.O. Box 1544, Tallahassee, FL 32302 so others can benefit from your comments. ☐



184-A LIGHT PEN
Inkwell Systems
Amiga with 512K
Pen and disk; $129.95

Let there not be light—the Inkwell Light Pen, that is. For those not familiar with this type of device, a light pen is a peripheral resembling a ball point pen with a wire coming out the back end that plugs into the joystick port. A driver program supplied with the light pen lets the computer know where the tip of the pen is located when you place it on the face of your monitor.

In the olden days of personal computing, before the mouse (the early 80's), entering screen position data was limited to playing with the cursor keys or jiggling a joystick to move the cursor to the desired location. This was often a time consuming and frustrating experience. Enter the light pen where you could simply touch the screen with the pen and press a button to register your position. It was great for menu selection routines and drawing graphics. The advent of the Amiga with mouse, however, provided an easy and far more accurate alternative to keys and joysticks and, in my opinion, obsoleted the light pen for almost all applications.

Like its predecessors, the Inkwell Light Pen is a space-age looking pen, with two touch sensitive buttons towards the tip—one for each of the mouse buttons. If you have an A500 or A2000, it plugs into mouseport two. If you have an A1000, you must plug the mouse into the second mouseport and the light pen into the first. Once you have activated the pen by running the program on the supplied disk, it works simultaneously with the mouse, and drags the pointer (slowly but surely) around the screen to the point on the monitor you touch with the pen.

But the Inkwell Light Pen has some serious if not fatal flaws. It will not work on areas where the screen color is black or otherwise dark. Since the Amiga generates 4096 colors, many of which are dark, there will be many instances where the pen will not work properly. Moreover, the pointer movement response time is relatively slow compared to the mouse, and at certain points on a uniformly colored screen, the cursor jumped around wildly as I moved the pen horizontally across the screen. When I called Inkwell about this problem, I was advised that a programmer would call me promptly, but I am still awaiting the call.

Trying to use the buttons was also a frustrating experience, as they are placed so close together that invariably you will press the wrong one accidentally. And since they are touch sensitive, you cannot easily rest your index finger on the tip (a natural writing position) but instead must hold it up in the air.

Using the light pen for selecting Menu items was difficult, as submenus (which appear to the right of the primary menus) were blocked from view by both the light pen and my hand. In trying to use the light pen with a paint program, I found it impossible to place the cursor accurately in the little color selection boxes. Unlike the mouse pointer, the light pen controlled pointer "floated" as I moved the pen. Finally, constantly holding the light pen to the vertical monitor screen is an unnatural position and far less comfortable than manipulating the mouse on a flat surface.

While a light pen may have some utility in custom application programs where users only need to select screen locations (to answer questions, for example), the button placement on this particular product diminishes even that advantage. The price is a bit excessive and takes it out of the realm of a neat little impulse purchase. For these reasons, I would have to say "pens down" to the Inkwell Light Pen. Stick with the trusty mouse and spend your money elsewhere.

Inkwell Systems, 5710 Ruffin Road, San Diego, CA 92123-1013 (phone: 619-268-8792). *—Steve King*

Circle #168 on Reader Service Card

DRAW 2000
Aegis Development
Amiga with 1 meg, 2 drives
Two disks; $279.95

While it is true there is nothing new under the sun, it is equally true that there is nothing under the sun that cannot be modified. Such is the case with *Draw 2000* from Aegis, the third incarnation of the first (and in my opinion the best) CAD program for the Amiga.

In order to better understand just how good it is, we should first take a look at how it works.

When the program is booted, it resembles nothing so much as a draw and paint program. Virtually the same tools are at hand: tools that provide for drawing lines, circles, squares, arcs, and the like. The difference is that *Draw* treats a shape as a body of information rather than as a body of pixels. In simple terms, when you draw a square the program stores information as to the length of the sides of the square, the color in which it was drawn and, most important, the center coordinates of the square.

Knowing this last bit of information is what allows the square to be moved, if necessary, without the necessity of first saving it as a brush and then recalling it and using it as a brush. Move the square to a new part of the screen and the program will adjust the center coordinates to mark the new location.

By way of analogy, creating a shape with *Draw* is rather like creating a record in a database, and moving it is like doing a simple sort in a database: the record is placed elsewhere in relation to other records in the file (the file be-



The 184-A Light Pen has a space age look. Two touch sensitive buttons near the tip function like mouse buttons.



clipper

OUR HOLIDAY SALES ARE SET!

The Clipper offers members of the *Ahoy!* Access Club discounts and other special deals on products and services advertised in *Ahoy!* and *Ahoy!'s AmigaUser.* Your membership is free for the duration of any subscription paid for prior to December 31, 1988.

Some of the offers are cross-referenced to ads in the December *Ahoy!* or *Ahoy!'s AmigaUser.* If you subscribe to only one of the two magazines and require information that appears in the other, contact the manufacturer directly.

To take advantage of any of this month's offers, follow the instructions on the front and back of the coupon. Fill in all necessary information. And use the original coupon only—facsimiles are not acceptable. For more information, call 212-239-6089 (if busy or no answer after three rings, call 212-239-0855).

Digitronics

Digitronics' ad on pa 57 of this month's *Ahoy!'s AmigaUs* offers the fully assembled and t d RC4 Ramcard for $225. The c con-figurable with ½ to 4 meg AM, and can be used with th a 2000 or with the 500 via Dig adapter box. *Ahoy!* Acces members get to take **10% off** price, and pay only $202.5 must add $4.05 for shipping via ground service; if you want you shipped some other way, call tronics at 215-459-4493. (Offer pires December 31.)

10% OFF

Pacific Peripherals

Pacific Peripherals' line of Amiga hardware (advertised on page 28 of this month's *Ahoy!'s AmigaUser)* includes the OverDrive hard disk controller for the 2000 (with or without hard disk drive) and the SubSystem expansion chassis for the 500. For *Ahoy!* Access Club members who order from them direct, Pacific will **waive the normal credit card surcharge,** and provide **free shipping.** (OverDrive and disk drives go by UPS 2nd Day Air; the SubSystem by UPS Ground.) (Offer expires December 31.)

NO SURCHARGE: FREE SHIPPING

Software Support International

Even before its most recent update, the *Super Snapshot* utility cartridge had far too many features to list. Instead of trying to describe the new V4, we'll refer you to Sup-port's ad on page 6 of this *Ahoy!* Also offered in that ad is th *Super Snapshot Slideshow Creator,* which allows you to combine *Snapshoted* screens into presentations with professional video effects. *Slideshow* retails for $14.95; but when you buy *Snapshot V4* at the advertised price of $64.95, you can buy *Slide-*

and ad on pag order by phone, ed in the ad and m saw this offer in the *Clipper.* pires December 31.)

$5.00 OFF

DUNE SYSTEMS

Dune Systems' Chip Checker hardware for the C-64/128 or PC (see page 45 of this month's *Ahoy!)* can help you save on the cost of computer diagnosis and repair. And the *Ahoy!* Access Club can help you save on the cost of the Chip Checker! Dune Systems is offering our members $10 off the $159 price of the 64/128 version—you pay $149. For the regularly priced at $259, You must expire

$10—

DigiTek Software

The fact that DigiTek markets so many programs for the Amiga and C-64 (see their ad on page 5 of this month's *Ahoy!'s AmigaUser)* makes their offer for *Ahoy!* Access Club members especially attractive. Buy any of DigiTek's programs directly from them for full price, and **take a second program for half price;** or, buy any two programs for full price and **take a third program free!** This offer is good on all DigiTek programs, including *Drum Studio, Skyblaster, Final Mission,* and *Amegas* (available for the Amiga only), and *Vampire's Empire* and *Hollywood Poker* (available for both the Amiga and 64). (Offer expires December 31.)

2ND DISK 50% OFF—OR 3RD FREE

BRiWALL

Briwall, whose ad appears on page 34 of this month's *Ahoy!,* has Christmas gifts for both 64/128 and Amiga users. With every order more, you can **Free Spirit's Christmas** the C-64 (list price $9.95). Or, with every order of $100 or more, take a **free copy of Free Spirit's Christmas Classics** for the Amiga (list price $14.95). Call Briwall toll free for more information: 800-638-5757. (Offer expires December 31.)

FREE DISKS

DISCOVERY

Like computer vi sible to cure. Bu them from infesting you Discovery Software's *Virus Protection (V.I.P.)* Purchase you covery. Se with the date of purch dicated. In return, you'll receive **copy of V.I.P.—a $49.95 retail value!** (Offer expires December 31.)

FREE V



SunRize Industries' *Color Splitter* allow *Digi-View* and *Perfect Vision* users to digitize color pictures from VCRs or color cameras without using color filters. As you can see in SunRize's ad on the inside back cover of this month's *Ahoy!'s AmigaUser,* it retails at $99.95. But *Ahoy!* Access Club members who order direct from SunRize **save 25%**—they pay only $75.00! For more information on the *Color Splitter,* or such other SunRize products as *Perfect Sound, Studio Magic,* or *Desktop Artist,* call 409-846-1311. (Offer expires December 31.)

SAVE 25%

ter Hal *ble.* (See their ad on page 44 of th month's *Ahoy!)* Their special fall price on the $164.95 package is $129.95. But for *Ahoy!* Access Club members they're going **$10 lower**—to just $119.95 (plus $4.00 postage and handling). And that price, available to our members only, is the **lowest advertised anywhere.** (Offer expires December 31.)

$10 OFF

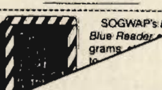
syste at serial spe (we *did tell* you about back in our April *Reviews* se you can't make up for lost time. But if you buy *RapiDOS* or *RapiDOS Professional* now, Chip Level will in a **free** *Parallel Utili* **regular $24.95** sentially th *Mass*

FREE $25

Central Coast

Once again, Central Coast Software invites *Ahoy!* Access Club members who own the *Quarterback* hard disk backup utility to upgrade to version 2.0. (At press time, this upgrade **offer was still available exclusively through the** ***Clipper.)*** Send your original *QB* disk, along with this coupon and a check or money order for $15.00 (MC and VISA also accepted). For more information on *Quarterback* and other Central Coast products, see their ad on page 7 of this month's *Ahoy!'s AmigaUser.* (Offer good indefinitely.)

UPGRADE



SOGWAP's *Big Blue Reader* grams to full details, see SOGWAP's ad on page 29 of the December *Ahoy!* (or our review in the June '87 *Ahoy!). Ahoy!* Access Club members receive a **20% discount** on the price of both the 128 and 64 versions. The retail price of *Big Blue Reader 128* is $44.95; you pay $35.95. And while the rank and file pay $29.95 for *Big Blue Reader 64,* you pa $23.95. (Offer expires December

20% OF

Lyco C

The dr than the res a separate power supply, which allows it to remain cool. It is faster, quieter, and more reliable, and comes with a full one-year warranty. A guide light is available as an option. The price of the drive in Lyco's ad on pages 4 and 5 of the December *Ahoy!* is $149.95. But when *Ahoy!* Access Club members prepay (via check, money order, or credit card), they receive **free shipping!** (Offer expires December 31.)

FREE SHIPPING

Computer Repeats

Computer Repeats continues to offer a **20% higher trade-in allowance** to *Ahoy!* Access Club members. Nonmembers must buy hardware from Computer Repeats at the prices listed in the ad on page 55 of the December *Ahoy!* But *your* prices are:

Amiga 500: $199 with trade-in of your C-128 computer, 1571 drive, and 1902 monitor; or, $355 with your C-64 computer, 1541 drive, and 1702.

Commodore 128D: $209 with trade-in of your C-128 and 1571, or 64C computer, 1541 and 1702.

Amiga 2000: $1189 with trade-in of your Amiga 500.

Call 303-939-8144 for a price quote for your particular system. Mention your membership in the *Ahoy!* Access Club. Then, when you ship your equipment for trade-in, include this coupon. (Offer expires December 31.)

20% HIGHER TRADE-IN

Creative Computers

Again this month, Creative Computers (see pages 10 and 11 of the December *Ahoy!'s AmigaUser)* is offering a discount on their entire line of Amiga products. With every order of $50 or more placed by an *Ahoy!* Access Club member, Creative Computers will extend a **5% discount,** and provide **free shipping** to anywhere in the Continental US. This offer is good on mail orders only; you must include this coupon; only one order per coupon is allowed; and you may not combine this offer with any other Creative Computers discount offer. For more information, call 213-370-2009. (Offer expires December 31.)

5% OFF; FREE SHIPPING

Use Original Coupon Only

Facsimiles will not be accepted

SPOC

SPOC's ad on page 39 of th month's *Ahoy!'s AmigaUser* offe their disk of 35 family-oriented ga e and educational programs, plus a bonus disk containing samples from their library of public domain programs (reworked to run bug-free and without use of the CLI). The SPOCPD collection normally sells for $20.00; but *Ahoy!* Access Club members can obtain the entire collection for only $15.00. (Offer expires December 31.)

$5.00 OFF

clipper

WELCOME ABOARD THE CLIPPER!

Bound into all subs er copies of *Ahoy!* and *Ahoy!'s AmigaUser, The Clipper* offers dis t prices and other special deals on merchandise sold at full p lsewhere in the magazine. These offers are available only to rs of the *Ahoy!* Access Club! (That includes you—because embership is free for the duration of any subscription paid to December 31, 1988.)

To take advantage o e offers below, simply fill in the information requested o the coupon, then clip it and mail it with your check or m e the original coupon only—photocopies and facsimile ccepted.

Software Support

Software Support's *Kracker Jax* parameter copying system is already offered at a bargain price: Volumes 1-4 for $9.95 each, and 5-7 for $19.95 each (see pages 24 and 25). But that's for the general public—not for *Ahoy!* Access Club members.

you **buy any two Volumes,** you can **one free.** You can mix and match any way you want—even buy two Volumes and get a $19.95 one free. n offer that needs no candy coat- page 25 for postage and hand- (Offer expires October 31.)

BUY 2— T 1 FREE

Q-Link

ad on page 55 free modem a ink, the leadi vice. That's ink is swe ccess Clu ck's Ca r $7.

P.A.V.Y.

of *Landmark, The Com Bible* are a devoted bu ny doubts, see their ast month's *Flotsam* its base of satisfi s offering a fall ackage—only age 11). ess Club that sp 0 po pric

Computer

SP1000VC printer is compatible—no is required. It o acters per seco cps in Near via a co in addi of matri ard). ady

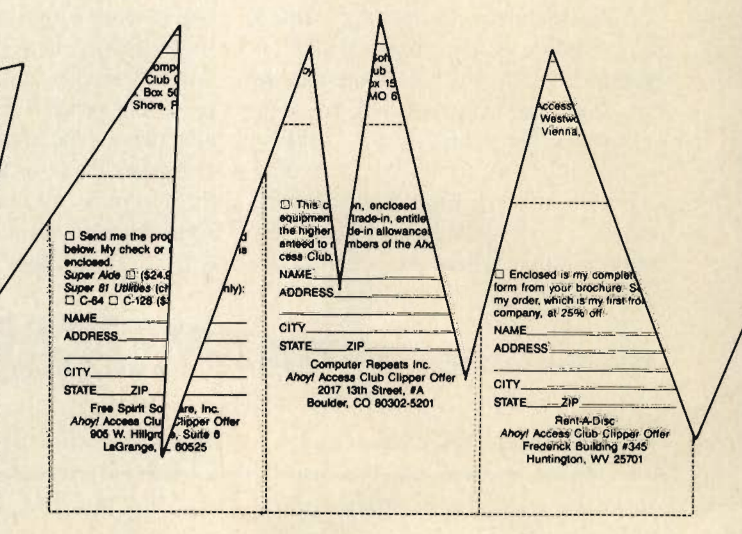
GET ACCESS TO SOME WITH THE *AHOY!*

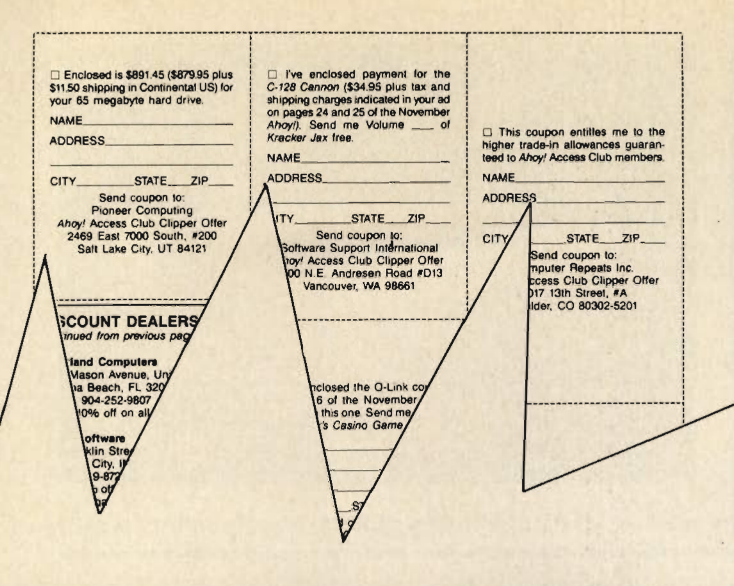
Subscribing to *Ahoy!* and/or *Ahoy!'s AmigaUser* has always made sense—for you and for us. We get to keep more of your money when we cut out the middlemen (our distributor and your newsdealer), and we kick some of the savings back to you with a discount rate.

And now you can save even more—in fact, you can save the cost of your subscription many times over!

The *Ahoy!* Access Club, launched in January 1986, has been expanded to offer its members even more clout in the Commodore marketplace. Here are some of the ways the *Ahoy!* Access Club can boost your buying power:

- The *Ahoy!* Access Club *Clipper,* published 12 times a year, contains exclusive discount offers on products advertised in *Ahoy!* and *Ahoy!'s AmigaUser.* Participating vendors offer reductions of 10%, 20%, 30%, or more on selected items, free bonus merchandise, and special closeout and combo offers not advertised elsewhere—all for Club members only!
- The *Ahoy!* Access Club Card is your ticket to discounts at participating computer software, hardware, and book dealers, and reduced admission at Commodore and Amiga conventions and swap meets across North America. (Details are found in each issue of the *Clipper.)*
- The *Ahoy!* Access Club BBS (modem required) offers continuously updated information on new offers available through the Club, as well as late-breaking industry news, corrections and updates to articles in *Ahoy!* and *Ahoy!'s AmigaUser,* and free electronic mail facilities. Operation is 24 hours a day, 7 days a week—for Club members only!





☐ Enclosed is $891.45 ($879.95 plus $11.50 shipping in Continental US) for your 65 megabyte hard drive.

NAME
ADDRESS
CITY STATE ZIP

Send coupon to:
Pioneer Computing
Ahoy! Access Club Clipper Offer
2469 East 7000 South, #200
Salt Lake City, UT 84121

☐ I've enclosed payment for the C-128 Cannon ($34.95 plus tax and shipping charges indicated in your ad on pages 24 and 25 of the November Ahoy!). Send me Volume ___ of Kracker Jax free.

NAME
ADDRESS

Send coupon to:
Software Support International
Ahoy! Access Club Clipper Offer
2700 N.E. Andresen Road #D13
Vancouver, WA 98661

☐ This coupon entitles me to the higher trade-in allowances guaranteed to Ahoy! Access Club members.

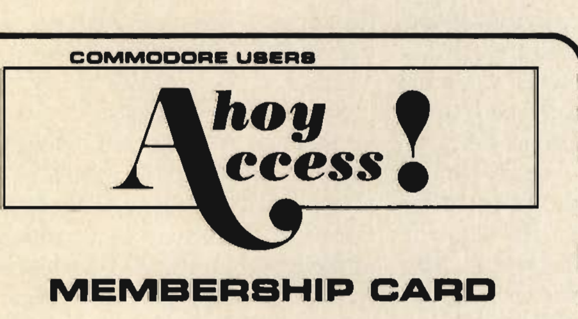
NAME
ADDRESS
CITY STATE ZIP

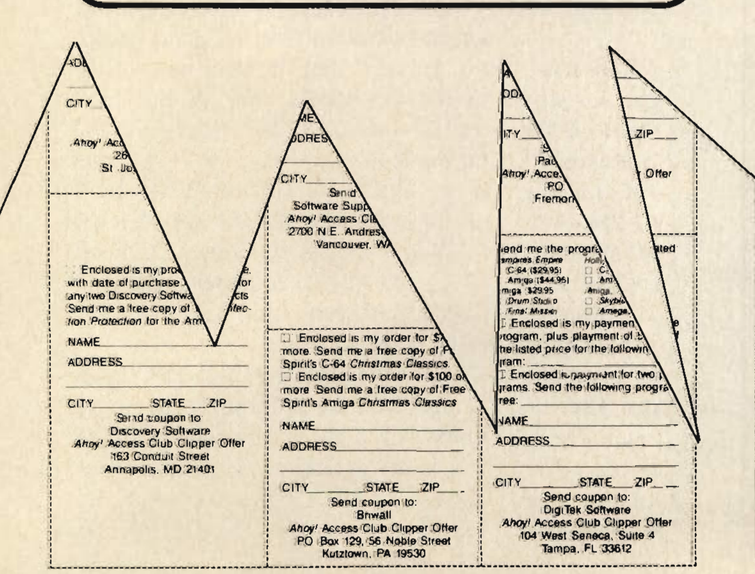
REAL BUYING POWER... ACCESS CLUB!

If you are presently a subscriber to *Ahoy!* or *Ahoy!'s AmigaUser*, your membership has already been activated. You'll find the *Ahoy!* Access Club *Clipper* bound into the front of every issue of *Ahoy!* or *Ahoy!'s AmigaUser*.

If you're not a subscriber, fill out and return the postpaid card bound between pages 50 and 51 today!

Let everyone else pay list price. You don't have to...when you have Access!





☐ Enclosed is my order for $... more. Send me a free copy of Free Spirit's C-64 *Christmas Classics*.
☐ Enclosed is my order for $100 or more. Send me a free copy of Free Spirit's Amiga *Christmas Classics*.

NAME
ADDRESS
CITY STATE ZIP

Send coupon to:
Brwall
Ahoy! Access Club Clipper Offer
PO Box 129, 56 Noble Street
Kutztown, PA 19530

Send coupon to:
Discovery Software
Ahoy! Access Club Clipper Offer
163 Conduit Street
Annapolis, MD 21401

Send coupon to:
DigiTek Software
Ahoy! Access Club Clipper Offer
104 West Seneca, Suite 4
Tampa, FL 33612



clipper

MORE SALES UNFURLED!

Bound into all subscriber copies, *The Clipper* offers discount prices and special deals on merchandise sold at full price elsewhere in *Ahoy!* and *Ahoy!'s AmigaUser*. These offers are available only to members of the *Ahoy!* Access Club. (You're a member for the duration of any subscription paid for prior to December 31, 1988.)

Some of the offers are cross-referenced to ads in the November *Ahoy!* or *Ahoy!'s AmigaUser*. If you subscribe to only one of the two magazines and require information that appears in the other, contact the manufacturer directly using the address or phone number provided.

To take advantage of any of the offers on these pages, fill in the information requested on the back of the coupon, then clip it and mail it with the payment indicated. Use the original coupon only—photocopies and facsimiles will not be accepted.

Lyco Computer

Rebates worked ... industry ... Lyco ... of $689.95 will re... Or buy a 64C with ... at the advertised price ... $30 rebate. Lyco can be ... 800-233-8760, outside Con... US, 717-494-1030 (Offer expires November 30.)

LightSpeed Distribution

In a competing magazine, LightSpeed Distribution is offering a special on a 50 meg hard drive featuring the Pacific Peripherals OverDrive controller (see review starting on page 42 of this month's *Ahoy!'s AmigaUser*). The drive autoboots from Workbench 1.3 in 28 milliseconds, with Direct Memory Access. The special price is $769 ... price too—... Day air shipping ... See LightSpeed's ad on ... of this month's *Ahoy!'s AmigaUser*, and feel free to dial their toll free customer support number (800-525-4428) for more details. (Offer expires November 30.)

SPECIAL PRICE FREE SHIPPING

Comp-U-Save

... designed by Bill's ... new ... board for the Amiga 500 or 1000 that expands either machine to 12 slots. It fits in any baby AT case and provides 6 slots for the 2000, 6 for the PC (4 of those for the AT). Our review of it starting on page 48 of the November *Ahoy!'s AmigaUser* is a real scoop—it's so new it's not even included in Comp-U-Save's ad on page 45. But it's **advertised here for the first time anywhere**. The price is $495. (Offer good indefinitely.)

...ANDER

... card and sales receipt to Discovery. They'll send you a coupon good for **50% off** the suggested retail price ... Arkanoid, or Virus Infection ... buy any of the trio ... see Discov...



Central Coast Software

On page 45 of this month's *Ahoy!'s AmigaUser* you can read about *Quarterback*, Central Coast Software's hard disk backup utility. We're pleased that Central Coast has chosen the *Clipper* as its forum for announcing, for **the first time anywhere**, an offer to all registered *QB* users **to upgrade to the new Version 2.0.** The new software can back up a hard disk to any AmigaDOS file structured device that has a standard mountlist entry. In particular, *QB* V 2.0 now supports C Ltd's Konica 10.7MB high density floppy drive, Inner Connection's Bernoulli drive, and CSA's streaming tape drive. *QB* V 2.0 also offers a two-drive restore. *Ahoy!* Access Club members can upgrade by sending in their original *QB* disk, along with this coupon and a check or money order for $15.00 (MC and VISA also accepted). (Offer good indefinitely.)

UPGRADE OFFER

MONTGOMERY GRANT

Montgomery Grant offers such a wide selection of popularly priced hardware and accessories (see page 5 in this month's *Ahoy!*) that you should be able to find something you can't resist. If you do, and your order totals over $100, include this coupon (or mention the *Ahoy!* Access Club if ordering by phone). You'll receive a **free piece of C-64 game software**. Call 800-759-6565 to order; outside the US call 718-692-0071. (Offer expires November 30.)

FREE GAME

RENT-A-DISC

Rent-A-Disc leases hundreds of entertainment, productivity, and utility programs for the 64/128, Amiga, and other systems. (See their ad on page 11 of the November *Ahoy!*)

Call 304-529-3232, or fill out the back of this coupon and return it, to request Rent-A-Disc's free brochure. When you place your first order you'll receive **25% off the total price**, whatever the amount—provided that it's your first order from Rent-A-Disc. (Offer expires November 30.)

25% OFF

Computer Repeats

... 2000 ... on page 12 ... prices are as follows ... $199 with trade-in of your ... 1571 drive and 1902 ... with your C-64 ... and 1702 ... $209 with trade-in ... 1571 or 64C compu... ... with trade-in of ... quote for ... your ... Club ... for ... include ... November 30.)

...% HIGHER TRADE-IN

Ahoy! DISK

... readers enjoy typing our ... month—but many others ... into each month's col... utilities as soon as ... In the latter group ... which contains all ... issue (including ... routines) ... promotional items ... often show up on ... as the free Q-Link ... of October's disk)

If you've never ... monthly disk, you don't know ... pleasure it is to simply load ... get you hooked, we're offering ... this (or any month's) *Ahoy!* Disk ... only $4.95—that's **$4.00 off the regular $8.95** price. If you prefer, take one of our **$10.95 Anthology Disks for $6.95**. Indicate your choice on the coupon on page 52. Send this coupon along with that coupon, and your check or money order. This special price is good for mail orders only, and for only one disk per customer. (Offer expires November 30.)

$4.00 OFF

Renew or extend your subscription before December 31 to lock in free membership in the *Ahoy!* Access Club for as long as you wish.



Software Support International

The *C-128 Cannon*, a high caliber ... and utilities package, and the ... library of parameter copiers received high marks when reviewed in *Ahoy!* On page 25 of this month's *Ahoy!*, Software Support advertises the *Cannon* for $34.95 and the seven *Kracker Jax* volumes for $9.95 to $19.95 each. But when *Ahoy!* Access Club members buy the *Cannon* at the regular price, they can **take any *Kracker Jax* disk free.** (Offer expires November 30.)

FREE DISK

Q-Link

... ad on page 6 of the November ... Q-Link tells you how to receive a ... modem and membership kit for their top-rated Commodore online service. That attractive deal is available to anyone—but for *Ahoy!* Access Club members only, Q-Link continues last month's offer of a ***free Rabbitjack's Casino Game Disk***. The software, sold for $7.50, lets you play slots, blackjack, poker, and other games of chance with fellow Q-Linkers. Send this coupon along with the coupon from Q-Link's ad on page 6, or call 800-782-2278/ext. 1480. (Offer expires December 15.)

FREE DISK

Creative Computers

Look at the dizzying array of software and hardware offered in Creative Computers' spread on pages 10 and 11 of this month's *Ahoy!'s AmigaUser*. Are you dizzy yet? Now, to really make your head spin! With every order of $50 or more placed by an *Ahoy!* Access Club member, Creative Computers will extend a **5% discount**, and provide **free shipping** to anywhere in the Continental US. This offer is good on mail orders only; you must include this coupon; only one order per coupon is allowed; and you may not combine this offer with any other Creative Computers discount offer. For more information, call 213-370-2009. (Offer expires November 30.)

5% OFF; FREE SHIPPING

PIONEER COMPUTING

Pioneer's ad on page 73 of this month's *Ahoy!'s AmigaUser* offers a 65 megabyte hard drive for $949.99. For the general public, that is. For you, as an *Ahoy!* Access Club member, the price is $879.99—which happens to be what the general public pays for a 40 meg drive. Where else can you get **25 megabytes of memory free**? Add $11.50 for shipping anywhere in the Continental US; if you live elsewhere, call Pioneer at 801-942-1174 for instructions. (Offer expires November 30.)

25 MEGS FREE!

DISCOUNTS FOR HOLDERS OF THE Ahoy! Access MEMBERSHIP CARD

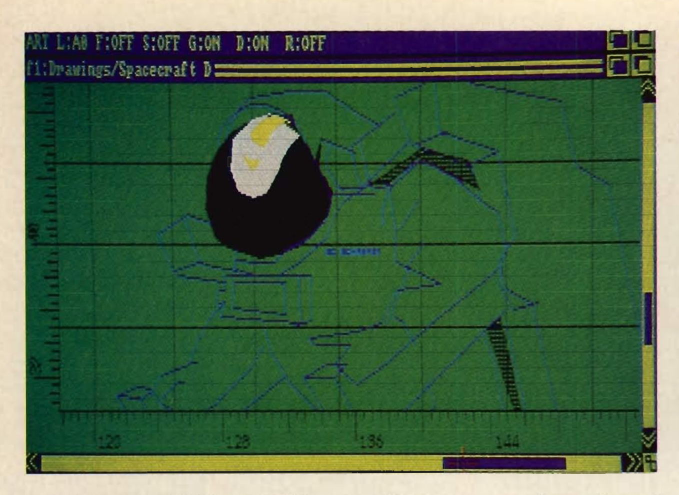
The following retail outlets are offering special discounts to holders of the *Ahoy!* Access Club Card. If you don't live near one of these dealers, show this page to the proprietor of your local store. Tell him he can be listed at no charge in the February '89 *Clipper* if he contacts us by November 1. Be sure to have him mention your name—because if he comes into the *Clipper*, we'll extend your subscription by three issues.

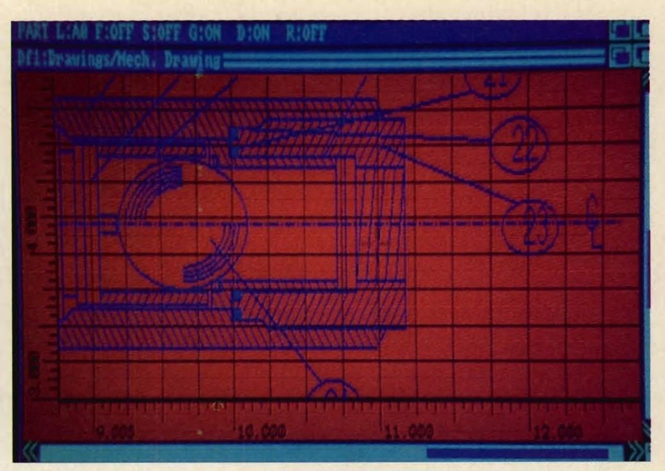
Davis Micro Works Discount Software
3484 The Alameda
Santa Clara, CA 95050
Phone: 408-243-1565
Offer: 10% discount on all merchandise. Both Amiga and 64/128 products are available.

FRC Basic Systems
314 Fort Lee Road
Leonia, NJ 07605
Phone: 201-944-4940
Offer: 10% discount on all merchandise.

Soft Cell Software Inc.
10910 N.E. Halsey
Portland, OR 97220
Phone: 503-252-DISK
Offer: 10% off already discounted prices on Amiga and 64/128 sales and rentals.

Continued on next page





While* Draw 2000 *resembles a paint program, it treats a shape as a body of information rather than as a body of pixels.

ing your complete picture).

It is also important to know that you can draw until you're blue in the face and still not see the picture on your monitor. What you will see instead is a representation of the picture. In the same way that the icon is not the file, the monitor image displayed by *Draw 2000* is not the picture.

A good example of this is a picture of Earth as seen from space. Now use the Zoom tool to enlarge a portion of it so you can draw in the state of Illinois. Zoom in on that image and draw a cartographer's representation of Chicago. Now Zoom yet again and draw in Division Street. Use the Text tool to label the street, zoom out one level to label Chicago, zoom out again to label Illinois.

When you're back to a full view, what you will see is a picture of Earth. You may see the outline of Illinois and you may even see a tiny colored area representing Chicago. This is the representation; the real picture is everything you did at the various levels of Zoom, including Division Street and the labels. Plotted on a good plotter, and with the scale of sufficient size, you'll see it all.

Layering is another unique feature of CAD programs, and *Draw 2000* provides for up to 255 layers to each picture. Let's go back to our floor plan. Our base picture is a representation of the floor of a new building or office. As an overlay to this, we'll now create a picture of blue lines representing the plumbing lines that pass through. A second overlay of red lines will indicate the electrical lines, complete with outlets. A third might show the path of air ducts.

Obviously, such a picture could be drawn without layering. The value of doing it the *Draw 2000* way is that the electrician can have a plan showing the basic layout and his work; the plumber can have his; the ductworker his. The architect would have all three versions plus one complete version showing all layers. Even more to the point, should modifications be necessary to any part of the plan, they can be made on only the pertinent layer. Any architect or designer will immediately see the value of this.

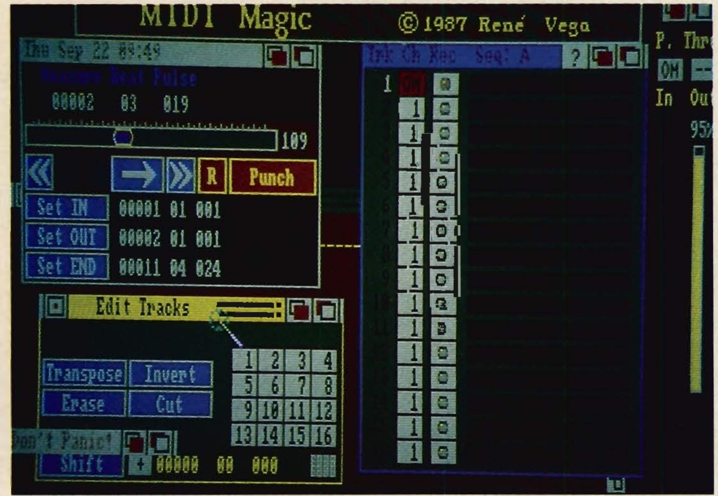
With the database as its heart, *Draw* also provides for the building of what are called parts. A part may be as simple or as complex as you desire, but let's assume you're drawing a floor plan and wish to include windows. Rather than draw 14 identical windows, draw one and save it as a part, then use it 13 more times.

Speaking of windows....

Although the minimum requirement for *Draw 2000* is 512K, you'll be able to open only two windows for drawing. For more serious use of the program, as well as the ability to open several windows at once—perhaps to compare an original drawing to one or more revisions—Aegis recommends at least one megabyte.

As for the changes between the last generation *Draw Plus* and *Draw 2000*, my guess is that the new name is to tie it to the Amiga 2000. While it will run on the 500 and 1000 models, the program is supplied on two separate disks. One is for running *Draw 2000* on conventional machines, the other for running a special version of *Draw* on an Amiga 2000 equipped with the 68020 processor chip and a 68881 math co-processor.

The benefit is speed, but even on an Amiga 1000 the program seems to be faster in redrawing the screen. Since this is an operation that occurs frequently as you change colors, scale, size of window, and other things, it is



MIDI Magic ***doesn't have all the sophisticated features of some other sequencers. Its main advantage is its ease of use and clear graphic presentation.***

an important area for improvement.

On any Amiga, *Draw 2000* also provides a third screen option. Previously you had hi-res or lo-res–selectable from within the program–and to this has been added a Workbench mode with only the four Workbench colors. I'll assume the reason for this is speed.

Another new feature is that drawings made with *Draw 2000* can now be exported to desktop publishing programs or any others that read IFF pictures. In addition, there is now support for combining CAD drawings with video images through the use of a genlock device.

As one of the first high-power applications for the Amiga, *Draw* has changed in response to user feedback and in response to the new hardware available. It was always a good program and in its latest version it is even better. For those who presently own *Draw* or *Draw Plus*, an upgrade program is available (see this month's *Scuttlebutt*).

Though I have reason to believe the documentation is a compendium of the documents written for the earlier programs–with new information added in the appropriate sections–it is still among the best. Often in the past I've complimented Aegis in general and John A.S. Skeel in particular for turning out some of the clearest documentation in the field, and that for *Draw 2000* is no exception.

Among those who have never used CAD programs, the main area of confusion seems to come from those TV commercials wherein a drawing of an automobile is rotated through three dimensions. *Draw 2000* is a two dimensional CAD program. While drawings or objects can be viewed and even rotated in two dimensions, three are presently outside the scope and the intent of the program.

Although it is not the most sophisticated CAD program in the world, it probably offers more per dollar spent than the best CAD programs for the PC. At the same time, it is not so sophisticated that you must be a math major to use it.

While it will be of value to architects, engineers, and other professionals, the rest of us can find many other uses. I've used it to produce a family tree, projects for Boy Scouts, organizational charts, and much more. It can be used any time the emphasis is on a neat, clean drawing.

Aegis Development, Inc., 2115 Pico Blvd., Santa Monica, CA 90405 (phone: 213-392-9972). *–Ervin Bobo*

Circle #167 on Reader Service Card

MIDI MAGIC

Brown-Wagh Publishing
Amiga with 512K (1 meg recommended)
$149.95

For all those musicians who have been waiting patiently for a user friendly sequencer to come along, wait no more: *MIDI Magic* has arrived. For those budding musicians who aren't that familiar with sequencers or MIDI, a brief explanation is in order. MIDI, an abbreviation for Musical Instrument Digital Interface, is a type of electronic language that permits electronic musical instruments (primarily synthesizers) to talk to computers. Basically, each key on the synthesizer is assigned a number so that when you press that key the number is sent to the computer (over one or more of 16 separate channels) which then knows which note you played. Additional information, such as the length of the note, is also transmitted. Conversely, the computer can send MIDI messages to your synthesizer and actually play it. If your synthesizer is multitimbral, several different instrument sounds (called voices) can be played simultaneously.

The software to coordinate this effort is called a sequencer package, and operates much like a combination of a multitrack tape deck and word processor. For once you have recorded your music, you can edit it and then combine small passages into an entire song. Although there are a number of sequencers on the market for the Amiga, most are very complex and difficult to use and master. *MIDI Magic*, on the other hand, was obviously designed for musicians who don't want to spend their time both learning and fiddling with a complicated computer program.

MIDI Magic was designed specifically for the Amiga. With it you can record different musical sequences each containing 16 separate tracks. For example, one sequence may be the introduction, another the verse, and the last the chorus. Each would have multiple tracks for the bass, melody, chords, etc. These sequences would be combined into a song where you would have the introduction, several verses, the chorus, another verse, and perhaps fade out with several choruses. Obviously, to achieve all this you need to record each sequence only once.

When you first load *MIDI Magic*, several default windows and icons appear automatically on an eight color screen. On the right is a memory indicator which turns from blue to yellow to red as you begin to use up memory. The title bar across the top serves as a visual metronome. If your time signature is 4/4, the title bar will be divided into four sections, and each individual section flashes to the beat in a sequential fashion from left to right. The heart of the program is the small Tape Transport Window. It contains buttons for recording and playback operations which you activate by moving the mouse pointer onto them and tapping the left mouse button. There are also three counters, which represent the current location in the song as well as Set In and Set Out points. The latter are used to designate sections of a track that will be edited or manipulated in some fashion after recording.

Before you record anything, however, you must designate which one or more of the tracks you want to use. The Track Display screen lists the tracks and the mode each is in (record or playback). It also shows to which of the 16 MIDI channels each track is assigned for both recording and playback, and has a section for you to enter a description of the track. You can also easily turn off any one or all but one of the tracks. To actually record, tap on the track or tracks, move over to the Tape Transport Window, and tap on the "R" button and then the play button. The audio and visual metronome will start up and after four count-in beats, the sequencer will record everything you play. You can also instruct the program to automatically start to record as soon as you begin to play your synthesizer. One nice feature is that *MIDI Magic* uses the internal Amiga voice for the metronome beat rather than a separate channel on your synthesizer. The program does not, however, use those voices to play instrument sounds.

If you make a mistake, there are several ways to correct the error. You can find that portion of the track you want to redo and set the Set In counter to

its beginning and the Set Out counter to its end. Then by tapping on the Punch button and recording, you will hear your masterpiece until it reaches the point you first set. At that time, the program will automatically switch to the record mode and continue recording until the Set Out point is reached. As a result, you only have to re-record the offending portion and not the whole sequence. A second method is to actually edit the individual notes in the Track Event Editor Window. While on the surface this method sounds both appealing and simple, in reality it is not—for each note is represented in a coded text form, and you must manually find the precise note and edit it by changing or replacing numbers. To make matters worse, every note has two entries—Note On and Note Off—so you must find the corresponding Note Off event and change that accordingly. In the Track Event Editor Window, you also have the opportunity to add or delete non-musical events. The most important of these are Program Change messages. Each instrument sound in your synthesizer has a specific number assigned to it. When it receives a Program Change message, the number associated with it will play remaining notes in the voice corresponding to that number. This allows you to change voices at any time during playback.

There are also a number of modifications you can make to entire tracks or the portions of them specified by the Set In and Set Out counters. You can combine multiple tracks into a single track (Merge) or copy a single track to multiple tracks. This is useful if you want a different instrument playing the same notes as another at the same time. Using the Edit Track Window, you can cut portions of tracks and even transpose their key by a designated number of semitones (12 semitones equals 1 octave). By copying track 1 to tracks 2 and 3, and transposing track 2 up twelve semitones and track 3 down twelve semitones, you can have the exact notes playing simultaneously at three different octaves. This window also permits you to shift a track backwards or forwards to synchronize it to other tracks. What would have been a useful addition is a function which took a small musical segment and continually repeated it throughout the length of a track.

A very important feature which is well implemented is Quantization, or auto-correction. Since the sequencer will record a note to the nearest 480th of a note, what you intend to be a quarter note will probably be more or less than 120/480th of a measure. Quantization rounds off all notes played to a value which you specify. *MIDI Magic* has four modes of quantization. The first places your note at a given rounded point, but maintains its precise duration. Another mode will also round its duration to the specified point (so a quarter note starts on a beat and ends precisely on a beat). The other two modes are the remaining permutations of the above.

Certain MIDI events (such as keeping track of a Pitch Bend wheel) consume extraordinary amounts of memory and are often not necessary. Once recorded, these events may be deleted by tapping on the appropriate button in the Global Delete Window. Unfortunately, you cannot filter out these events in real time while recording.

Finally, once all of your tracks are in perfect order, you can open the Song Editor Window and combine your sequences to form a song which can then be saved to disk. This operation is quite simple. All you have to do is type in the sequence number followed by the number of times you want it repeated. You can also change its tempo as well as its pitch. As you continue along entering sequences, the cumulative time of your song is indicated in the leftmost column.

While *MIDI Magic* does not have all the sophisticated features of some other sequencers, its primary advantage lies in its ease of use and graphic presentation of vital information in a comprehensible form. You can even edit the program icon (clearly explained by Circum Design) to personalize your disk to boot up with default parameters you select. The manual is well-organized, understandable, and full of illustrations of both the various windows and menu items. The program is mouse-driven, but most of the important commands can also be accessed using the function keys. The most thoughtful feature is the duplication of the manual in an onscreen "Help" file with its own point and click alphabetical subject index. Technical support (which you will need) was readily available and Circum Design went out of its way to solve several of my problems which in the end were really synthesizer-related. They are also dedicated to increasing the utility of *MIDI Magic* by coming out with additional support modules (such as patch librarians and a program to convert music files from one sequencer program to another). And for the benefit of hard disk users (and those who constantly crash diskettes), the program is not copy protected.

For those musicians who always wanted to purchase a sequencer but were scared off by them, I would certainly recommend *MIDI Magic*.

Brown-Wagh Publishing, 16795 Lark Avenue, Suite 210, Los Gatos, CA 95030. *—Steve King*

Circle #191 on Reader Service Card

DESKTOP VIDEO: A GUIDE TO PERSONAL AND SMALL BUSINESS VIDEO PRODUCTION

by Austin H. Speed III
Harcourt Brace Jovanovich, Publishers
$14.95

The term "desktop video" has been around at least since late 1986. It was apparently coined to mimic the concept of desktop publishing. What desktop publishing does—use computers to integrate text, graphics, and page layout—for a portion of the print industry, desktop video will allegedly do for a similar portion of the video industry.

Desktop video is not just killer demos using digitized images to show off our computers. Desktop video is an opportunity for the hobbyist to experiment with professional video production techniques using consumer electronics. More important, like desktop publishing, it can allow an individual or small business to make a buck putting together sales demos, training tapes, educational videos, or even entertainment packages.

Desktop video is still a relatively new concept to most computerists. But even the perfect wave starts off as a swell. And riding the crest of the desktop video swell is Austin H. Speed III's *Desktop Video: A Guide to Personal and Small Business Video Production.*

The Amiga press picked up on this book immediately. In trying to find a market niche, the Amiga is probably THE machine for desktop video. Its ca-

pabilities (sound, graphics, color, and animation) teamed with third-party digitizers, genlocks, frame grabbers, and titling and other video software, put it ahead of anything in its class. The introduction of Speed's book was seen by some of the Amiga press as legitimizing desktop video.

Speed's book is an unabashed promotion of desktop video, and of the Amiga. Although Speed describes three computers–Amiga, IBM, and Mac–all of his examples and illustrations use only one–the Amiga.

Desktop video pundits see this as a coup for the Amiga. But I'm afraid it ain't so. Speed uses the Amiga as his only example because it is the only system on which he seems to have any experience developing videos–and limited experience at that.

Before I give a brief description of the book and its contents, let me hypothesize about how it was written. Speed is a computer professional and undoubtedly has some background with making home movies. He realized that computers were having a measurable effect on video production. Consumers are no longer limited to black boxes called video effects titlers, video editing units, and such. Instead they can use a micro to edit their videos.

Speed had a premise that a simple system could be assembled for under $5000 and that he could write a book about just such a system. And, with little or no desktop video background, he plunged right in and did.

Desktop Video is a noble effort at covering a lot of ground. What it has in breadth of coverage, however, is offset by lack of depth, limited technical information, and a short shelf life. We see lack of depth in the hardware descriptions. Although most product categories are covered, relatively few competing products are described.

This could be offset by technical information that would help us Amiga owners understand and compare hardware specs in general, but it is not. If you want to comparison shop for a new video camera, you'll have to find out a lot more than is included in *Desktop Video.*

From a computer perspective, this book will have a short shelf life. For music production, it discusses Activision's *Music Studio* and EA's *Instant Music.* Hardly a comprehensive or up-to-date list. These two programs lack so many advanced features that they aren't even indicative of what can be done on an Amiga by an accomplished musician. Mimetic's *Soundscape* is also mentioned.

For video software, Speed describes EA's *Deluxe Paint, Deluxe Video,* and *Deluxe Productions,* NewTek's *Digi-View* and *Digi-Paint, Aegis Animator,* and JDK's *Pro Video CGI.* With this list you can get a feel for many of the important features, but descriptions are so brief that, again, they are unlikely to help us shop among the wealth of programs available today. (Note that *Desktop Video* was just published in 1988.)

This 276-page book is divided roughly into thirds. The first covers equipment–computers, software, VCRs, cameras, editors, lighting, and audio. As described above, Part I is a series of mini-reviews. Some of the most interesting portions are clear diagrams produced by manufacturers and sidebars paraphrasing a professional video producer.

Part 2 is the "how to" section describing scripts, schedules, budgets, shooting techniques, and post production techniques, including music, animation, and titles. Computers and software are discussed as a part of the post production phase, but you won't read about anything beyond the basics.

In Part 3, Speed describes his system and three projects he has completed. His desktop video system is comprised of an Amiga 1000, genlock VCR, camcorder, video edit controller, stereo, and mixer. The three video projects are a science-fiction video about his son fighting aliens on the way home from school, a dealer promo for athletic shoes, and a personal video made about and for a friend on a diet.

The first and third clearly fall into the home movie category. The second may have been a commercial job or it may have been an experiment using a friend in another business. These are, apparently, also Speed's first three efforts at desktop video. While we have a chance to learn with him, nearly looking over his shoulder, we don't gain from the kind of expertise you might find in the pages of *Ahoy!'s AmigaUser* or *Videomaker* magazines. Statements in *Desktop Video* may give experienced readers pause to wonder who they're listening to. "A trained eye may see some significant differences in visual quality between this video (athletic shoes) and broadcast quality productions, but I don't."

Speed obviously believes in the future of desktop video. He promotes it. For that I salute him. But after having read every word in his book–from table of contents to glossy and index–I'm not sure who his audience is. Peo-

ple experienced with computers will not learn from the brief coverage of hardware and software. Experienced video camera jockeys will benefit little from the filming discussion.

Perhaps the strength of this book does not lie in how it can teach experienced users to do more than the hardware or software manuals describe, but in how it can draw videophiles to computers and computerists into video. From the computer side of the equation, *Desktop Video* is a book worth reading, but I doubt you'll pick it up after that. I bought it on Friday, read it on Saturday, and shelved it (to collect dust) on Sunday.

Harcourt Brace Jovanovich, Harcourt Brace Jovanovich Building, Orlando, FL 32887 (phone: 407-345-2000). *—Richard Herring*

Circle #192 on Reader Service Card

PROSCRIPT

New Horizons Software
Amiga with 512K and ProWrite 2.0
Disk; $49.95

ProScript is a special printing module to add PostScript printer support to the Amiga word processor, *ProWrite 2.0.* PostScript is a "page description language" that many of the fancier laser printers speak. *ProWrite* doesn't address those printers, and the Amiga's Preferences program would be out of its league trying to do so. Therefore, the *ProScript* program acts as a "translator" between *ProWrite* and PostScript printers (and typesetting equipment). Moreover, since it's a computer language, PostScript has some very powerful features of its own to add into the deal.

ProScript isn't a "printer driver." It's a program that you run separately when you get ready to print. To get *ProScript* to work, you feed it a document generated (and saved) with *ProWrite 2.0.* With enough memory, you could multitask both products, although you'd still have to save documents with *ProWrite 2.0* before printing them with *ProScript*.

The "2.0" version number for *ProWrite* is important. *ProScript* will not chomp on documents produced by the earlier versions. The *ProScript* distribution disk includes a conversion program for bringing over the text of *Scribble!, TextCraft,* and *TextPro* documents. These can then be formatted, edited, and prettied up in *ProWrite* for use by *ProScript* in printing to PostScript. Got it? Whew!

What It Does

When invoked, either from the Amiga WorkBench or (avast!) from the CLI, *ProScript* opens a setup window that lives on the WorkBench screen. From CLI, it can be operated with or without the Amiga Intuition interface. If you have enough memory, and don't need to use the device *ProScript* is printing to, you can proceed with other tasks while *ProScript* does its thing. *ProScript* will print to any PostScript device that is physically attached to your Amiga, as long as there's a logical place to send stuff (PAR:, SER:, etc.). In addition, you can send the program's output to a file, wherever your heart desires.

Disks are a good place for your heart to desire to send PostScript files. PostScript code is notoriously verbose, and its files—particularly the ones containing halftones or bitmapped fonts—are enormous.

For its part of the deal, *ProWrite 2.0* is not the most highly featured word processor on the market, but it has the basics covered and a few of the niceties, the nicest of which is its elaborate What You See Is What You Get screen display. The product isn't all that great as a desktop publishing title, which it doesn't claim to be. However, it does put words and pictures together on a page in a reliable, intuitive, easily mastered way that is far less complicated, if less powerful, than desktop publishing packages.

Adding *ProScript* to *ProWrite* makes for very easy printing and formatting of simple documents into VERY classy pages that only picky typographers and printing professionals will find any fault with. In short, you never SAW documents that looked this good! Indeed, good looking pages is one of the main reasons people pay the extra bucks it costs to do PostScript printing.

Typeset Quality

Out of the box, *ProWrite* permits mixing Amiga fonts on a page of text, and it happily incorporates graphics and color into its documents. It seems to have only common-sense and available-memory limitations on the number of fonts permitted.

Using the *ProScript-ProWrite 2.0* combination, and sending your PostScript file to a professional typesetter (by modem, till these shops learn to speak Amiga), you can get true typeset quality originals suitable for reproduction in even the most demanding publishing applications.

For creating documents for use around the office, or for civic clubs, schools, and such, the *ProScript-ProWrite*-PostScript results are excellent. The process is also very easy to learn and do. However, for serious, professional typography applications, choose something from the Amiga's desktop publishing column, in order to get more control over the spacing, kerning, tracking, leading, and other esoteric typesetting considerations in the final output—things that *ProWrite* doesn't address.

What It Doesn't Do

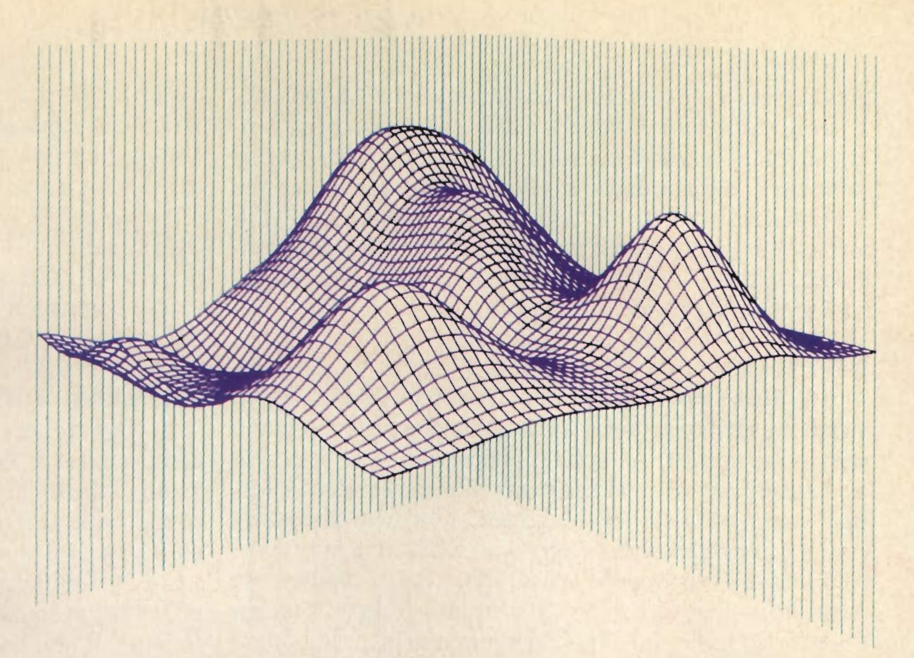
ProScript does not separate colors for mechanical reproduction (say, offset printing). That limitation applies to text-only, for what printers call "line art spot color," as well as to pictures, for what would be called "process color." Indeed, the "process color" feature would surely be beyond the scope of the product pair's intent. However, line art separations would be very useful for producing camera-ready originals for mechanical reproduction.

The test document created for this review had blocks of text in black, red, and yellow, and *ProScript* rendered them very effectively in black, gray (for red), and light gray (yellow). Printed to lithographic film, rather than paper, the result would have been quite suitable for making offset plates. Indeed, using a coarser screen would have permitted reproduction as "camera ready" art from the positive. Only a little of what printers call "stripping" would have been required if the finished page were to be printed in red, yellow, and black inks at a print shop.

The *ProScript* program does a good job of rendering color pictures into halftones for black and white reproduction, and it permits the user to select an appropriate density (in dots per inch) for the halftones, as well as the number of shades of gray (up to 256) to be used. Its black and white con-

Continued on page 66

STATE OF THE GRAPHIC ARTS



By Nancy J. Freeman

Amiga graphics have come of age. If there were any lingering doubts about that, the dominance of graphics products at the most recent AmiEXPO (Los Angeles, October 7-9) blew them away. It is clear that all art-related Amiga applications, from painting to animation, are in a state of explosive growth—and this is very good news for artists and other visual communicators.

The following is a survey of the outstanding new graphics products, many of them announced at AmiEXPO, all of them scheduled to be in stores by the time you read this.

HARDWARE

SpectraScan, ASDG's new color scanner for the Amiga 2000, is a unique addition to the Amiga's graphics arsenal. It consists of the Sharp JX-450 Desktop Color Scanner, the ASDG TwinX General Purpose I/O Board, and ASDG's SpectraScan software. This professional quality system can produce an image with up to 300 dots per inch resolution and 24 bit color. That means 16 million colors, folks—and though the Amiga display is limited to 4096 colors (based on 12 bits), the availability of 24 bits allows the software to manipulate the image to a far greater extent. Like a number of other Amiga graphic products, this one has some image processing capabilities, mostly color and size manipulation and some smoothing functions. It also uses minimum amounts of chip memory, building the image in fast RAM instead. This means much larger page sizes are possible—how about 3300 by 5100 pixel HAM images! It also means polite multitasking with another application, such as *Professional Page*, which currently can interface with SpectraScan, or *Express Paint*, which can also use fast RAM to good advantage. SpectraScan also includes a friendly and flexible interface, performs color separations from the original 24 bit data, allows viewing while scanning, and offers a host of other goodies.

SpectraScan exemplifies the proliferation of new hardware and software products that are increasing our ability to use the Amiga's elegant and powerful graphic capabilities. These products enable us to produce professional quality graphics applications on the Amiga at a lower cost than on any comparable system.

THE PAINT WAR CONTINUES

Version 3.0 of *Express Paint* comes with Workbench 1.3, which means much better printer drivers, with support for the HP Paintjet and Postscript printers. A special LaserXPress version is also available. *Express Paint* can use halfbright mode for a total of 64 colors. Some of the new features include unlimited Undos (actually limited by available memory) and the best airbrush yet available. Also added is a four cornered dithered fill tool that can produce some rather special effects, and a 3-D Perspective mode.

Express Paint joins *DeluxePhotoLab* in partially bypassing Chip RAM limitations. It can build a virtual page of the image in Fast RAM and show a user-defined section on the screen. This has the happy result of making BIG pictures possible, and/or several spare pages for cutting and pasting. Version 3.0 also adds color cycling, anti-aliasing options, and full page views. Some of the text handling features bring it close to the desktop publishing realm. Many of the new features make it easier to use, more powerful, and more user-controllable. It is a professional level paint program that advances the state of the art.

Digi-Paint II, scheduled at press time for imminent release, will have 3-D image mapping, full overscan, faster response time in all drawing modes, anti-aliased fonts, automatic anti-aliasing for images, new painting modes, multiple Swap screens (up to 160, depending on memory!), improved brush handling routines, dithering, and more. This should not only rectify some of the major deficiencies of the first version, but also set several new standards. NewTek is moving more in the direction of video applications, which is one of the reasons this upgrade has taken so long. It should be a big step forward for HAM paint programs.

Photon Paint has an upgrade with some limited animation features—multiple Swap pages that can animate. MicroIllusions has added fill tools, airbrush functions, stencil capabilities (my favorite), brush manipulation options, and several other items. These features, added to those already

present, make *Photon Paint* an attractive HAM package.

Amiga artists are fortunate indeed, for these paint programs, plus *DeluxePhotoLab* and *DeluxePaint II*, give us some very powerful tools. In addition, they can all use the IFF standard in some way, and thus can communicate with one another and with the many other Amiga graphic programs; and they are all relatively inexpensive for the capabilities they provide.

DRAWING

Gold Disk's *Professional Draw* is a color CAD program which, in addition to being a full-featured drawing program, can do distortions and special effects, multiple point bezier curves, and color manipulation based on the Red-Green-Blue system or the Yellow-Magenta-Cyan system of pigment colors. Like *Professional Page*, with which it is fully compatible, *Pro Draw* has the latest printer drivers and can do color separations (see the cover of January's *Ahoy!'s Amiga-User* for an example). This feature alone is an important selling point; color separations done the traditional way are expensive. *Pro Draw* can also do thumbnail printing for storyboard uses. Gold Disk seems to be working hard at producing a complete line of professional level graphic tools, all compatible with one another.

Draw 2000 replaces *Aegis Draw Plus* as Aegis' high-end CAD system for the Amiga. It is also available in a version which supports the 68020/68881 co-processor for greatly increased speed. Aegis has provided for accuracy to within 1/1000th of an inch, up to 250 layers, and several bug fixes. The number of output options has been increased, with improved printer drivers. I'll stop here, as a full-length review of the product is offered in this issue (page 41).

THREE DIMENSIONS

Several new and upgraded 3-D modeling packages have joined the ranks. Of particular interest is a series of 3-D Design disks from Antic Software. For those who use the 3-D programs, three dimensional clip art is a welcome innovation. These four collections—Architectural Design, Future Design, Human Design, and Microbot Design—provide some basic and often used shapes which can be combined and modified within a 3-D program. 3-D clip art is an inevitable development, and we should use more of these time- and aggravation-saving products in the future.

PUTTING IT ALL TOGETHER

The Director is one of the most powerful of the presentation programs, but also one of the most difficult to use. In this age of point and click, fewer people are willing to learn to program. So Right Answers has announced an Extra product disk that will have several preprogrammed effects to use with their *Director*. It should make things easier for novice and pro alike.

KEEPING TRACK OF IT

Microfiche Filer Plus has some features of interest to artists and anyone who deals with volumes of graphics. Among other changes and improvements, Software Visions has improved the graphic reduction routines and added support for HAM and overscan pictures. This should make it a lot easier for persons who have a rapidly multiplying collection of disks full of images to keep track of what is where. You could have a reduced image of every picture from every disk in your collection, all in view at the same time. *Microfiche Filer Plus* also has some storyboard options which make good use of the graphic reductions, and optional AREXX macro programming and compatibility. It is also completely downward compatible with *Microfiche Filer*. (See full-length review next issue.)

FINALLY, ANIMATION

At least six new animation programs were announced or demonstrated at October's AmiEXPO. (I say at least because of the trend toward animation capabilities in several of the paint program upgrades mentioned already.) They are *Zoetrope* from Antic Software, with some paint program capabilities, some video effects, and a large number of animation and special effects features; *MovieSetter* from Gold Disk, joining their line of full-featured, professional level graphic programs mentioned above; *Animation* from Finally Technologies, a cel animation program that works in all display modes, including HAM; *Onion* from Silent Software, with many powerful features; *Photon Video* from MicroIllusions, plus their new *Transport Controller*, for use with external video tape frame by frame controllers; and *Videola* from Aegis, written by Gary Bonham of *Anim* fame. Add these to the numerous others that have already been unveiled this year, and one begins to wonder what's going on. Can there really be that many animators out there?

The answer is that there weren't many animators until recently—but there will be. We may be seeing the beginning of a new division of the desktop video and presentation phenomenon—desktop animation. Traditional animation is a very time consuming and expensive endeavor. Many people who would have liked to use animation could not previously afford it. Now, a single artist with a computer can produce many kinds of animation in a fraction of the time, and therefore at a fraction of the cost. Like the other desktop industries, this one is likely to develop a whole new market that takes advantage of the new possibilities.

The Amiga, with its powerful graphic capabilities and its blitter, is the ideal machine for such an application. Even if the final product needs to be done with traditional animation, or on a high-end computer system, the Amiga is still ideal to develop the concepts and do the preliminary animation. With the excellent 3-D modeling programs, the growing selection of video products, and the tremendous array of animation and presentation tools, our favorite machine is emerging as an animation powerhouse.

THE FUTURE

Now that the Amiga has finally established itself as the graphic artist's dream that it's been all along, there's no predicting the strides that developers will make in the months ahead. But we can be sure that as the Amiga grows in popularity and capability, graphics programs will follow suit. Readers are advised to watch future issues of *Ahoy!'s Amiga-User* for announcements and reviews of the latest graphics products, and for ways to utilize them in the most effective manner. ☐

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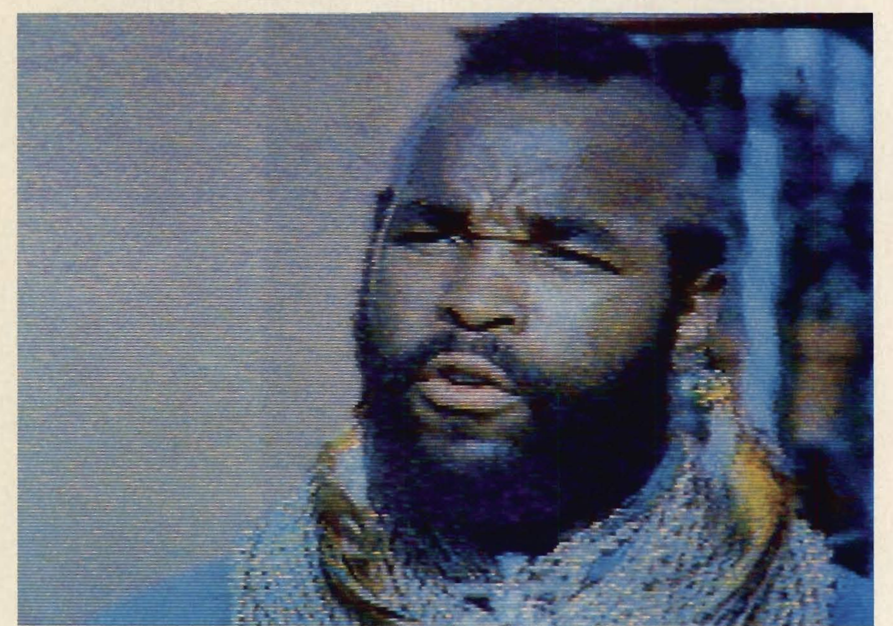
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The publisher cannot assume responsibility for errors in the above listing.

Above: *inside* **FrameGrabber** *are six 256 kilobit chips (outlined) configured as 192K of dynamic RAM. The front of the unit, with video input jack and hue, intensity, and saturation controls is to the right; the rear of the unit, with monitor, computer, and power connectors is to the left. Identifying marks on several key components have been obliterated. Below: some off the air HAM, fool.*



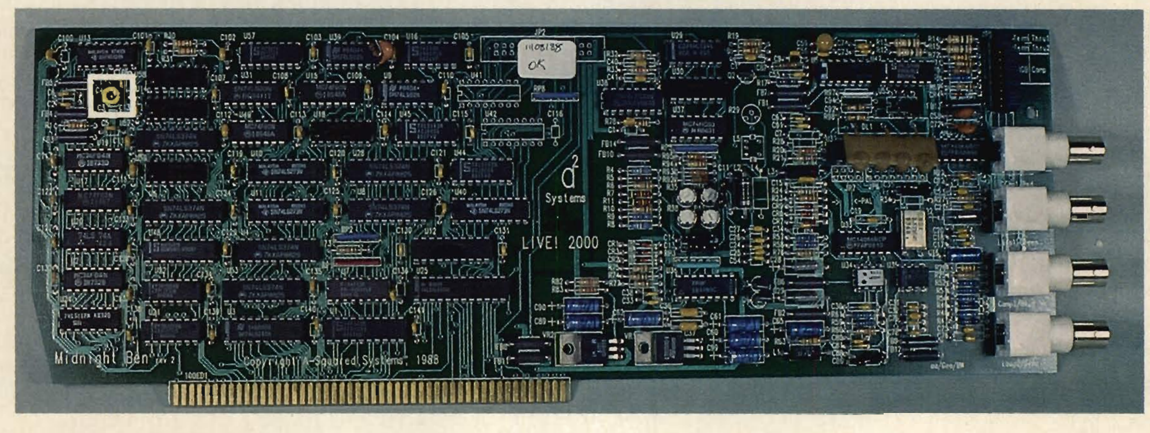
FROM

Or, How Fared and Frame Six

Precisely a half a year has gone by since we took a close look at what was available in Amiga video digitizers and frame grabbers. Since that time just about half of our predictions have come to pass. Does that mean that the other half will come about within the next six months? Will this become the second semi-annual Amiga video digitizer feature which will henceforth appear on a regular basis within the pages of this magazine? Only time will tell if it tells us anything

FRAMEGRABBER
Progressive Peripherals & Software
Any Amiga with 512K; 1meg recommended
Price: c. $595.00

If you have been with us all along, the first thing you may notice about *FrameGrabber* is that the price is 100 smackers, or 20%, more than originally predicted. This was not unexpected, inasmuch as *FrameGrabber* does contain a fair amount of dynamic RAM, 196,608 bytes of the stuff to be exact, which comes out to 192 kilobytes in computer jargon. Recall that kilo in computerese, as in kilobyte, is really 1024.



LIVE!2000's *BNC connectors for input/output are to the right. Adjustment capacitor C4 is the yellow spot in upper left (outlined).*

SEE TO SHINING CRT

the Amiga Video Digitizers Grabbers O'er the Past Months

Text and Photos by Morton Kevelson

at all.

This time around we examine *FrameGrabber* from Progressive Peripherals & Software. This unit will grab a frame in just about any Amiga screen format in real NTSC video time, which is 1/30th or 1/60th of a second. We also examine the Amiga 2000 version of *LIVE!*, which contrary to our expectations has enough new features to merit a once over, under, and all about. Along with *LIVE!* we will tell you about *INVISION*, a software product which has the potential to turn a *LIVE!*-equipped Amiga into a desktop video effects generator.

On the other hand we will not be looking at NewTek's *Video Toaster*, which as of this writing still looks like it will be shipping Real Soon Now and will probably cost well over $1000 in view of the present state of the RAM market. We will also not be looking at *Digi-View Gold*, which, contrary to current advertising, has not yet reached the stage of shipping Real Soon Now. Regarding *Digi-View Gold*, our latest information indicates that it will simply be the same old *Digi-View* properly redesigned for the Amiga 500/2000 so as not to require an external adapter. Of course by the time Real Soon Now comes around, it may very well turn out to be somewhat more than that.

If you are just coming on board, we suggest that you take a look at the August 1988 *Ahoy!'s AmigaUser*, as it will bring you up to date on all the Amiga video digitizing options which are currently available.

This onboard RAM is what gives *FrameGrabber* the ability to snatch a video image in just 1/60th of a second per field or 1/30th of a second per interlaced frame. The actual amount of built-in memory used will depend on the chosen image format. For example, a 320 by 200 pixel, black and white image with 16 levels needs 32,000 bytes, while a 320 by 400 pixel HAM image requires 192,000 bytes of online storage.

FrameGrabber is housed in a standalone black aluminum enclosure approximately 7½" wide, 1½" high, and 9½" deep. These dimensions do not include the space required for the various controls and connectors which are located on the front and back panels. The front panel is adorned with intensity (brightness), hue (tint), and saturation (color) controls. The operation of these controls is similar to what you might find on a color television under the names we have given in parentheses. These controls let you adjust *FrameGrabber* to accommodate your video signal.

FrameGrabber expects to see a standard NTSC video signal applied to the RCA jack which is located on the front panel. Note that a single NTSC video frame is actually composed of two interlaced fields. That is, one half of the image is scanned across the screen, followed by the second half which is literally written between the lines formed by the first half. The Amiga can display interlaced video as well as non-interlaced video. In the latter case both fields are identical, with the second one overlaying the first. *FrameGrabber* can digitize either a single field or an entire frame.

The back panel is fitted with a standard Centronics connector through which *FrameGrabber* connects to the Amiga's parallel port. Thus, if you already have a printer connected to the parallel port, you should be able to use the same cable with *FrameGrabber*. Of course you cannot use your printer while you are using *FrameGrabber*. *FrameGrabber's* energy needs are provided by an external "brick" type power supply which also plugs into the back panel. A red LED on the front panel indicates when power is applied. There is no on/off switch, so you will have to control *FrameGrabber's* power externally.

The hookup is completed by disconnecting the Amiga's video cable from your 1080 monitor and plugging it into one of the 9-pin "D" connectors on the back panel. An adapter cable, which is supplied with *FrameGrabber*, provides the link between the second 9-pin "D" connector and the color monitor. If you have a 1084 color monitor, be sure to tell your dealer about it. You will need a different set of adapters to hook up your monitor.

Once *FrameGrabber* is installed it intercepts the Amiga's RGB video signal before it reaches the monitor. This lets you monitor what *FrameGrabber* actually sees when it is digitizing. In normal use the Amiga's RGB signal is passed on to the monitor without alteration; however, *FrameGrabber* must be powered up before anything can be displayed on the monitor. Thus *FrameGrabber* has to be turned on even when you are not using it. Of course you can use *FrameGrabber* without completing the video monitor connections, but you will lose some operational convenience. While using *FrameGrabber* you can toggle between the Amiga's output and what *FrameGrabber* sees via a menu selection or by hitting the Amiga's TAB key.

When the NTSC video signal enters *FrameGrabber* it is separated into its red, green, blue, and synchronization

components. The RGB signals are sent to a three-channel, four-bit analog to digital converter. The synchronization signals are used to control the timing of the digitization process. The output of the A/D converter is then stored in the onboard RAM in real time. The exact format of the digital data is set by the Amiga via the parallel port. For example the 320 by 400 pixel HAM image we mentioned above requires 12 bits (four bits per color) for each pixel for a total of 1,536,000 bits, which is of course 192,000 bytes. A little binary math tells us that four bits per color works out to 16 hues for a total of 4096 distinct shades, just what the Amiga ordered.

The digitized RGB video signal inside *FrameGrabber* is also sent to a set of buffers which drive a complementary set of digital to analog converters. These D/A converters provide the signal which is sent to the Amiga monitor when you choose to view *FrameGrabber's* output. Although the *FrameGrabber* software supports a wide variety of Amiga screen formats, *FrameGrabber* only sends 16 level black and white or 4096 color images to the monitor. So even if you are digitizing in only four colors, *FrameGrabber* still shows you a full color image which is roughly equivalent to the Amiga's HAM display. The following is a list of the Amiga screen formats supported by the *FrameGrabber* software:

	For 512K Amigas:
320 x 200 B&W or color 384 x 240 B&W or color 320 x 400 B&W or color 640 x 200 B&W or color 640 x 400 B&W or color 320 x 200 HAM 384 x 240 HAM 320 x 400 HAM	Color displays will be limited to 320 x 200 pixels. Overscan will be limited to 384 x 240 pixels in two colors. The 640 x 400 B&W mode will not be available.

Note that B&W is a 16 level gray scale monochrome image. Color images up to 384 pixels wide can be 2, 4, 8, 16, 32, or 64 colors. The 64 color display is for those computers equipped for extra half-bright mode. Some early Amiga 1000s are unable to display extra half-bright. The 640 pixel wide color images are limited to 16 hues. In addition to the above, *FrameGrabber* also lets you digitize directly into the red, green, and blue buffers, which you would need to do when constructing a color image with a black and white camera using tri-color filters. *FrameGrabber* also lets you digitize quarter size images into the upper left quadrant or into the center of the screen.



An example of off the air HAM (of an off the air show) with* FrameGrabber *in black and white—a 16 level gray scale monochrome image.

The display format also gives you the option of using pixel dithering to increase the perceived number of colors. The dithering effect is inversely proportional to the number of colors in the image palette. With HAM images, dithering is effectively turned off. With 64 or 32 color images, the dithering effect is virtually invisible. With a two color palette, dithering attempts to create a black and white gray scale. We found dithering to be very effective when used with four-color, 640 by 200 pixel images.

Although *FrameGrabber* does digitize any Amiga image format in just 1/60th of a second for non-interlaced and in 1/30th of a second for interlaced images, the actual time to construct and display the digitized image is significantly longer than that. A small part of the delay is due to the time it takes to send the data from *FrameGrabber* to the Amiga via the 8 bit parallel port. The data transfer time was too brief to measure for a two color image; however, it took over six seconds to send over a 640 by 400 pixel, 16 color image. The image processing time is where the real delays come into play. The shortest time was for the lo-res, two color image, which was ready in about two seconds. The longest time was for the 640 by 400 pixel, 16 color image, which required over one minute before it was done. A 384 by 240 pixel HAM display came up in about 37 seconds.

FrameGrabber is menu-driven with optional keyboard commands for each menu item. This is important, as you will most likely use *FrameGrabber* while viewing the digitized image and then grabbing as desired. Although a single mouse click will bring back the menus, we found it convenient to do what we wanted by just hitting the appropriate key. When an image is digitized it is placed into a frame buffer in the Amiga's RAM. Once it is in the buffer, *FrameGrabber* lets you do a limited amount of image processing before you save it to disk. This is possible since the software retains all 12 bits per pixel while the image is in the buffer. The digitized image can be adjusted with regard to contrast, saturation, brightness, and overall balance between the red, green, and blue components. You can also adjust the individual colors in the image's palette. The software does not provide for the adjustment of the image sharpness or for the reduction of image graininess.

When you are satisfied with the image you can save it to disk. *FrameGrabber's* Path-Master File Selector window is a bit of an improvement over the usual Amiga file windows we have become accustomed to. In addition to the usual file selection functions, the Path-Master lets you sort files by size, date, or in alphabetical order. The contents of the current disk are also retained so you don't have to go through the monotonous gronk gronk of the disk drive every time you load or save a file as long as you don't change the disk. Sev-

eral image file formats are supported. These are the universally recognized but somewhat limited IFF format, as well as the IMGS format which stores the complete data in compressed format, the IP format which is compatible with *Digi-View,* and of course the RAW data format. Watch out for the last two formats, as they are real disk hogs. A 640 by 400 pixel, 16 color image takes up 768,000 bytes of disk space in the RAW file format.

As long as an image remains in the computer's buffer, it can be reconstructed. This is important for overscan images which are messed up by the menu display. *FrameGrabber* lets you conveniently toggle the menus and pointer on and off for viewing the image. Overscan images, which are saved in IFF file format, can be reloaded, but they cannot be completely displayed by *FrameGrabber.*

FrameGrabber also supports manual and time lapse animation. In manual animation you start an IFF ANIM file and manually digitize additional images which are automatically appended to the file. In time lapse animation you specify the time delay between frames and number of frames you want and then start the process. The maximum time delay is 99 hours, 59 minutes, and 59 seconds. The minimum time delay is limited by the time it takes to transfer, analyze, and save the image to disk. As we noted above, this will be at least two seconds plus disk time. The process can be speeded up by using quarter sized images and by saving the data to RAM:. *FrameGrabber* also lets you freeze the palette which is used for the first image in the sequence to save additional calculation time.

As a result *FrameGrabber* is ideally suited for doing time lapse animation of slowly changing processes. However, it is far from the ideal tool for doing real time animations from live video.

Other features include a multiple exposure mode which can be used to reduce noise by averaging several images. For genlocking or for some graphics programs you can also lock out use of the first color or the first and second colors in the palette.

Setting up *FrameGrabber* and operating the software is straightforward. The first dozen pages of the 32 page manual are devoted to installation of the hardware and a brief description of the menus. The bulk of the operating instructions, along with some technical details, are presented as a series of appendices which comprise the remainder of the manual. You should go through the entire manual, as operating instructions are interspersed with technical details which may or may not interest you. For programmers, the distribution disk contains a commented program, written in C, which demonstrates the operation of the system. Overall, the supplied documentation should be sufficient for third party developers to provide independent software support.

In terms of performance we were generally satisfied with *FrameGrabber.* The quality of the images which we digitized from broadcast television were excellent. In particular overscan HAM images turned out very well. We were less successful in digitizing color images using a black and white camera and a set of color filters. We have no complaints regarding the resolution or sharpness of the images which we created through the color filters. However, we did find it very difficult to obtain a satisfactory color balance. The automatic exposure control of our Panasonic WV-1410 and the color temperature of the illumination seemed to work against us. The dithering feature surprised us with its effectiveness. It will probably be useful for desktop publishing applications.

If you need a system which can handle time lapse photography along with real time, single frame, color video digitizing, *FrameGrabber* looks like a good choice.

Progressive Peripherals & Software, Inc., 464 Kalamath Street, Denver, CO 80204 (phone: 303-825-4144).

LIVE!2000
A-Squared Distributions Inc.
Amiga 2000
Price: $450

For the most part, the Amiga 2000 version of *LIVE!* performs the same as the Amiga 1000 version we looked at in the August '88 issue. *LIVE!* is essentially a bit plane grabber in that it captures a single bit plane in 1/60th of a second for non-interlaced and in 1/30th of a second for interlaced images from a standard NTSC video signal. Thus *LIVE!* can do real time digitization if its operation is limited to two color images.

The *LIVE!* software does not give you the option of digitizing simple sin-





LIVE!'s *Tiling effect breaks the display up into a 4 × 4 array of 16 cells, each a replica of the original image.*

gle bit plane images. The supplied software lets you digitize single frames or sequences of frames in a variety of screen formats. The simplest format is a four bit plane, 16 level gray scale black and white digitization in 320 by 200 pixels. You have the option of turning on interlace, which does not double the resolution, or changing the format to 320 by 400 pixels. In the latter case the frame rate slows down to about 7½ frames per second. You can also turn on overscan for a 368 pixel wide by 240 pixel or 480 pixel high image. The overscan display mode eliminates the borders, and fills the entire screen with *LIVE!* imagery.

During normal operation, *LIVE!* continuously displays digitized video in real time. The four bit plane black and white image plays at 15 frames per second, which results in very good image resolution and smooth animation. The brightness and contrast of the image can be easily adjusted to compensate for different video sources or to create different effects. A smooth feature also lets you reduce the staircasing effect, or jaggies, which are the result of image digitization with a finite number of pixels. Of course this does slow down the display rate a bit.

LIVE! also lets you play with the appearance of the digitized image via its mouse tinting feature. Moving the mouse to and fro varies the overall brightness of the image. Clicking the left mouse button changes the color map to one of 12 presets. These include the default 16 level gray scale as well as a negative version and a variety of tints. When a color map is selected you can change the tint by moving the mouse from side to side.

LIVE! also makes a stab at color digitization by supporting a 32 hue simple color mode and the 4096 color HAM mode. Overscan and interlace are available in the simple color mode; however, only 320 by 200 pixel images are available in HAM mode. The resulting colors are an approximation of the original colors, since *LIVE!* digitizes colors in sequence. In the process the first two bit planes are assigned to red, the next two to green, and the fifth bit plane is for blue. This of course limits the image to four levels of red and green and only two levels of blue.

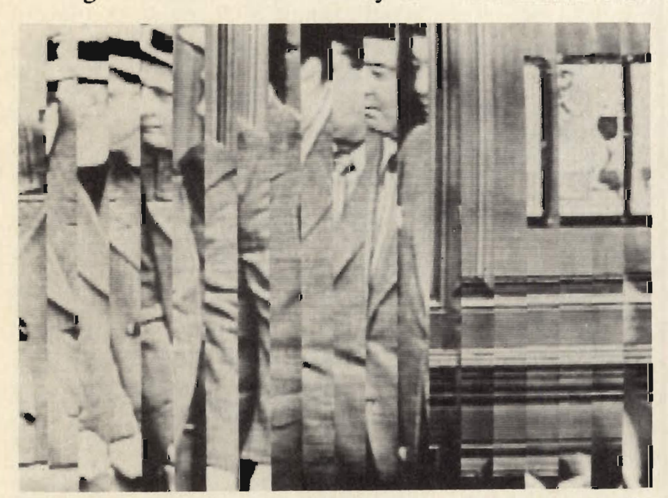
The resulting images can be saved as single frames or as a sequence of frames stored in RAM. The sequence of frames can then be dumped to disk as a riff animation file. The current image can be frozen at any time by hitting the space bar, at which time it can be saved to disk. Pressing the F9 key initiates an automatic capture to RAM. The F10 key plays back what you captured. The number of frames which will be captured can be adjusted, and is of course limited by the screen format and the available RAM. A three megabyte Amiga 2000 can accommodate up to 70 images in low resolution black and white format.

Our description up to this point applies to the Amiga 1000 version of *LIVE!* as well. The Amiga 2000 version contains some additional hardware which provides some additional special effects. These effects are accessed via a second set of menus which are accessed via a new "2000 F/X Menu" selection in the projects menu. The new special effects include Tiling, which breaks the display up into a four by four array of 16 cells. Each cell contains a complete replica of the original image. Of course the frame rate is slowed down slightly in this display mode. The Spiral effect is similar to the Tiling effect except that the 16 tiles are filled and emptied sequentially from the center outwards. Each cycle takes about two seconds, and only a single frame is displayed in this mode. The Mirror effect simply flips the screen from left to right. The Fresnel effect breaks the image up into a series of vertical strips.

The new effects only function in the 320 by 200 pixel display format in either 16 level black and white or 32 hue simple color. The software for the new effects appears to be in the early development stages, as it was possible to enter the 2000 F/X Menu in an unsupported mode and lock up the computer.

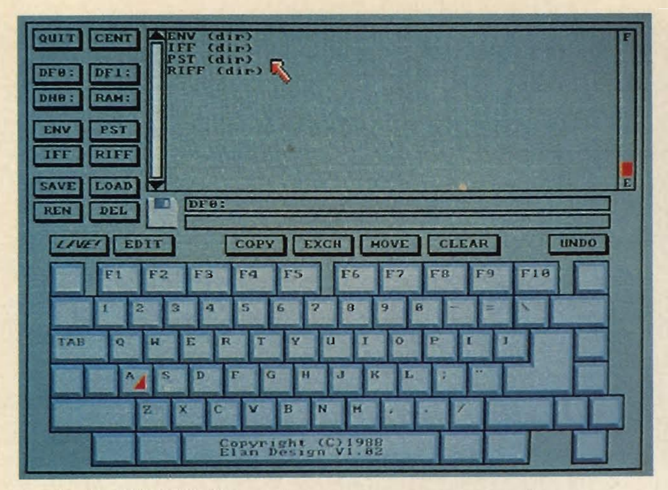
The Amiga 2000 *LIVE!* hardware is similar to the Amiga 1000 version, with several improvements. The board is a standard Amiga 2000 card which plugs into an empty slot inside the computer. The back end of the board contains four BNC connectors. These are industry standard coaxial connectors with bayonet fittings. If your video cables all have standard RCA plugs, you will need some low cost BNC/RCA adapters. Radio Shack has a variety of these fittings which will do the job.

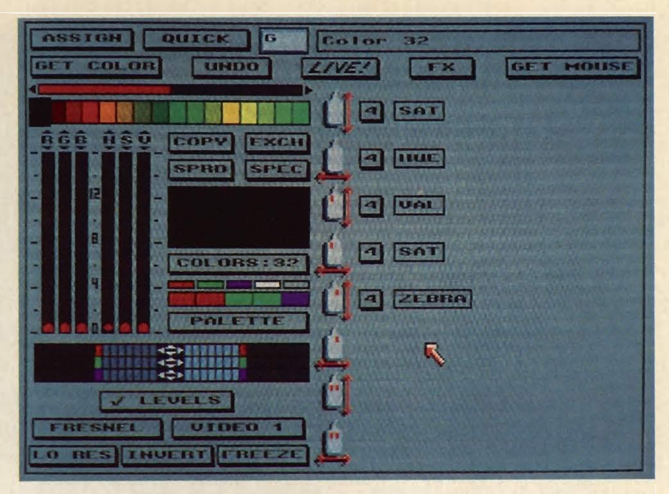
Our sample of the *LIVE!2000* board





Special effects made poossible by LIVE!2000's *new hardware: Fresnel (breaking image into vertical strips) and Spiral (16 tiles are filled and emptied from center out).*





Left: INVISION's *environment screen, its file management system. Right: the preset screen offers editing tools.*

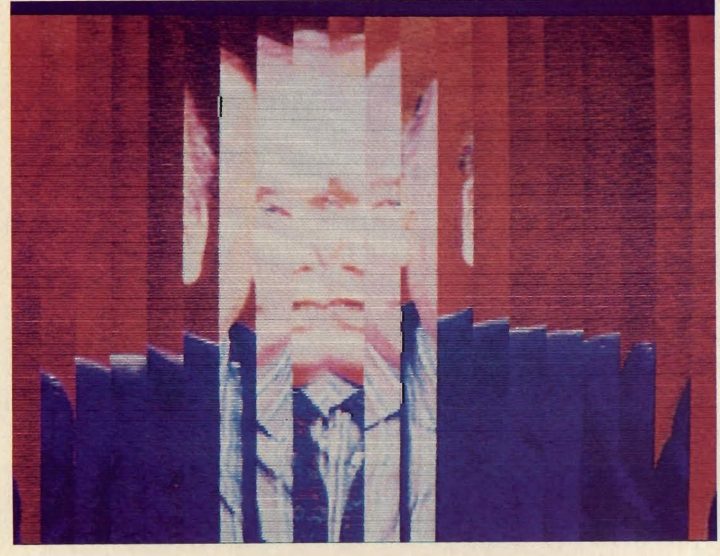
was missing the mounting bracket which holds the back of the board in place after it has been installed. This would allow the board to move out of the slot while a video cable is being connected. According to a *LIVE!* spokesperson, the missing bracket was not available at the time the board was shipped. Be sure to send in your warranty card, as *LIVE!* will be sending out brackets when they are available. The brackets look easy to install, and should not present a problem other than the inconvenience of opening the computer again.

The four BNC connectors can be configured in a variety of ways. You have the option of choosing between one or two NTSC composite video signals or one color separated RGB video signal. The NTSC composite signals may be looped through, in which case the output jack should be properly terminated, or the signals can be terminated on the *LIVE!* board. Software selection between the two inputs is via the 2000 F/X Menu. If you choose the separated RGB video signal, you have the option of selecting a separated synchronization signal or placing the synchronization signal of the green signal.

The documentation provided with *LIVE!2000* was the same as for the Amiga 1000 version. Some additional sheets in the package showed how to install the board in the computer and how to configure the four BNC connectors for input and output. There was no information on the use of the new special effects, nor was there any mention made of their existence.

The addition of the dual video source selection or RGB option will be welcomed by professional users. This will place additional emphasis on the application of *LIVE!* as a special effects tool for desktop video. The software which is supplied with *LIVE!* is functional. However, it seems to us to be intended primarily for demonstration of the *LIVE!* hardware. We arrived at this opinion after seeing what *LIVE!* can do with the proper software, in particular *INVISION* which we examine next. In this context, we feel that *LIVE!* would be a low cost, yet powerful special effects generator for desktop video and studio applications.

A-Squared Systems, 6114 La Salle Ave., Suite 326, Oakland, CA 94611 (phone: 415-339-0339).



Fresnel effect in color. The new effects only function in the 320 × 200 pixel display format in either 16 level black and white or 32 hue simple color.

INVISION
Elan Design
Amiga with LIVE!
Price: $129

So you've read our reviews of *LIVE!* for the Amiga 1000 (August) and 2000 (above) and were duly impressed. Maybe you're into video, and after the second VCR and the camcorder *LIVE!* didn't seem all that expensive so you sprung for it. You found it interesting, and you impressed your friends and family on more than one occasion.

Now you've reached the point where the novelty is starting to wear off and you realize that the *LIVE!* software does not utilize *LIVE!* to its fullest, and it seems that there should be other things that can be done with *LIVE!* and the Amiga. If that's the case, in our opinion you are ready for *INVISION.*

INVISION and *LIVE!* is to performing with video as an electronic keyboard is to performing with music. The combination of *INVISION* and *LIVE!* places a host of special video effects at your fingertips. To be exact, *INVI-*

Dynamic Effects

CYCLE—causes the image to cycle through all the colors in the Preset's color map.

NUKE—generates a rapid positive to negative image reversal.

INVERT—flips the image upside down and right side up. On the Amiga 2000 you can also flip left to right or even all four ways at once.

STROBE—controls the digitizing frame rate for a stop motion effect.

BLINDS—makes the screen look like you're looking at it through the venetian variety. Mouse position determines the width of the blinds. Genlocked video will show through the blinds.

MIRROR—creates a vertical mirror image as seen in a reflecting pool. The mouse movement controls the position of the mirror. Moving the mirror above the screen's center gives a beveled glass effect.

MOSAIC—makes giant square pixels for a blocky effect.

ZEBRA—a variety of two color high control effects based on the image's color or brightness.

SCR POS—lets you slide the screen down and out of sight.

SUPERGEN—works with the Supergen from Digital Creations to let you dissolve between live video and the computer's video output.

Remember that all of the above effects are controlled by the movement of the mouse. When you select a Preset, only the one shot effects are implemented. The dynamic effects do not appear until you move the mouse.

SION lets you associate one or more video effect with each and every of the Amiga's alphanumeric and function keys.

There are two distinct aspects to *INVISION.* In the Performance Mode you play *INVISION* very much like a musical instrument. The basic stuff that you work with is the *LIVE!* digitized overscan display, in either 368 by 240 pixels or 368 by 480 pixels. You provide the melody when you call up a selected Preset by simply hitting an Amiga key. Variations on the theme can be had by playing with the mouse.

Presets are *INVISION's* building blocks, and special effects are the components of presets. A preset is actually a collection of settings which tells *INVISION* how to display the *LIVE!* image. Presets are assembled in the Preset editing screen. Presets consist of a color map which defines the basic appearance of the image. When creating the color map you can select the number of colors (up to 64 with half-bright mode), the brightness, and the contrast of the image and its color palette. The palette controls are very similar to what you might find in an Amiga drawing program. There is a set of six sliders for adjusting the red, green, and blue content of each color, or if you prefer you can use the hue, saturation, and value sliders to get the same results. You can copy colors or exchange colors between slots, you can create a smooth spread of colors between two selected colors, or you can create a spectrum of colors between them instead.

The palette controls also let you assign bit plane priorities and sensitivities to the red, green, and blue components of the video signal. This lets you do things like emphasizing the red parts of the image while ignoring the green or the blue. The bit plane assignments also determine how *INVISION* will mix images. *INVISION* is able to mix up to three image sources at a time.

The first source is of course the *LIVE!* image itself. The second source can be any IFF file from any graphics program, or it can be a single *LIVE!* digitized frame, or it can be a series of *LIVE!* digitized frames which were saved in the *LIVE!* riff animation file format. In the last case you have complete control of the rate and playback mode, such as continuous or bounce, of the animation. The third source is any video signal which you can mix with the computer's own output by use of a genlock device. If you have the Supergen genlock from Digital Creations, *INVISION* lets you independently control the fade level of the Amiga graphics and the background video.

After the color map you can choose from several "one shot" effects which will appear whenever you select the Preset. This is where you select between lo-res (240 lines) or hi-res (480 lines) for the display. According to *INVISION,* hi-res "lends an electrified look to your screen." To us, moving images seem to jitter, while stationary images look just fine. The remaining "one shot" effects include invert (on the Amiga 2000 this can be left/right as well as up/down, or even both), and freeze, which grabs and displays a new image every time you hit the key. On the Amiga 2000 you can also choose between *LIVE!'s* two video inputs at this time. The Amiga 2000 also supports the FRESNEL effect.

The real fun with *INVISION* is its dynamic effects. Dynamic effects are assigned to left/right or up/down mouse movement, and are selected by various combinations of mouse buttons. Up to four dynamic effects can be assigned to a single preset. You also assign a speed value of 1 to 8 to each dynamic effect, which determines how fast the effect varies with mouse movement. Among the dynamic effects are the ba-

sic appearance controls of SAT/HUE, VAL/SAT, and VAL/HUE, which control colors and their intensity, along with LEVELS, which controls the overall brightness and contrast. There are ten additional effects explained in the sidebar on the facing page.

INVISION's opening display is actually its environment screen. The environment screen is *INVISION's* specialized file management system. With it you can save and load entire environments. An environment is a complete set of Presets, along with any assigned IFF and riff files, which can be saved or loaded. Thus you can quickly customize the *INVISION* video instrument for every performance. Between the environment screen and the preset screen, *INVISION* provides a complete set of easy to use editing tools which let you create or modify your own operating environments. The distribution disk contains five sample environments, including a blank one and one for a 512K machine, to help get you started.

The environment screen also lets you load and save individual Presets, IFF files, and riff files to and from individual keys. This lets you easily create libraries of special effects setups to meet your requirements.

INVISION's spiral bound manual uses a unique design which, with the help of some velcro fasteners, lets you set it up as a tent on your desk. This lets you conveniently flip through pages without laying it flat. The manual is organized in a learn as you go fashion and is completely indexed. The distribution disk contains the public domain *INVISION* Performer programs. This lets you automatically display IFF and riff which have been saved from *INVISION*. Thus you an create video displays with *LIVE!* and *INVISION* and set them up on disk for distribution.

The combination of *LIVE!*, *INVISION*, and a genlock device is a very powerful, low cost special effects generator. If you are doing desktop video with your Amiga, this setup should be part of your gear. If you already own *LIVE!* and are not interested in desktop video, *INVISION* will still add new life to your *LIVE!*

Elan Design, P.O. Box 31725, San Francisco, CA 94131 (phone: 415-621-8673).

Tuning *LIVE!*

As always, the first thing we did after opening the *INVISION* package was check the distribution disk for any ReadMe files. Sure enough, there was one which we dutifully examined. Among other things we learned about a potential "split screen" problem that we might encounter while using *INVISION*. It seems that the tuning of some *LIVE!* units, which were made before *INVISION*, might be slightly off, which would result in the splitting of the display whereby the bottom half of the *LIVE!* image would appear on top. Aha!, we exclaimed, a new special effect albeit an undesirable one. The ReadMe file went on to assure us that the problem was really very minor and easily remedied. If we should encounter it we need simply pack up our *LIVE!* and send it back to A-Squared, who would recalibrate the unit at no charge and send it back to us.

Naturally we were unconcerned; after all, hadn't we just unpacked our brand new *LIVE!2000* after we had received *INVISION?* Apparently we had a visit from the imp of perversity, as sure enough we had "split screen." Well, we promptly hiked our *INVISION* over to our Amiga 1000 and its *LIVE!*, on the off chance that it would work over there. You guessed it, split screen.

Well, there we were—the weekend was ahead of us and the deadline was fast approaching. Even with bilateral overnight service we would end up in a scheduling bind. But wait, the ReadMe did say a simple adjustment. Forthwith we popped open the *LIVE!1000* and carefully examined the board for simple adjustments, of which we found no fewer than five. Four of these, in a single cluster, were labeled brightness, contrast, tint, and hue, and did not seem likely candidates to cure split screenitis. The fifth one, all by itself on the other end of the board, away from the video input/output jacks, was a minute trimmer capacitor, modestly labeled C4. If you carefully examine our photograph of *LIVE!2000* on page 52 you might spot the yellow speck in the upper left hand corner.

At this point the morning was well behind us, and we decided to make sure before going any further as we were well aware just how finicky video equipment could be when it came to calibration and alignment. We got on the blower and gave Wendy Peterson at A-Squared a shout. Our suspicions were confirmed. All we had to do was tweak C4 in a clockwise direction with a non-metallic alignment tool till the split screen went away. This adjustment is so sensitive that vigorous handling during shipping could easily knock it off. We promptly had visions of *LIVE!'s* in the air, winging their way between NY and CA while C4 kept getting knocked about.

Adjusting *LIVE!1000* was simple enough, as C4 was easily accessed once the cover and the underlying radiation shield was removed. Adjusting *LIVE!2000* presented a minor crisis as there was not enough clearance for our alignment tool between *LIVE!* and the adjacent memory board. We also had a difficult time getting a clean video signal with the cover off the 2000 because of all the radio frequency interference which was turned loose. We solved the first problem by fabricating a suitable substitute out of half a toothpick. As a result we now keep toothpicks along with the cotton swabs and isopropyl alcohol in our bag of various and sundry items for computer emergencies. We didn't solve the second problem so we took pot luck. The split screen went away, but we still couldn't get a decent image till we put the lid back on the Amiga 2000.

The above is presented as a possible solution to those users whose *LIVE!* may be afflicted with split screen. We cannot take any responsibility for any mayhem you may cause by undertaking the described procedure. It's just that we found it easy enough to do and we thought you might like to know about it.

FLICKER-FREE



Learn how to produce smooth animations with a technique similar to C's double buffering.

Over the years I have written games for many computers, from the TI99/4A and VIC 20 to the IBM and C-64. I like designing games mainly because of the great computer graphics which are possible. You can imagine my anticipation when I finally gave in and bought an Amiga. I have to admit, even though I am a diehard C-64 fan, that the Amiga is a fantastic machine. I also have to admit that I was disappointed when I displayed several large BOBs on a window and they were flashing and flickering like crazy.

I was determined to rid myself and my Amiga of this annoying BOB flickering. I think I have found a reasonable solution and would like to share it with you, my fellow BASIC programmers.

You will notice that there is no flickering in the many Amiga commercial games that are written in C, the native language of the Amiga. In C there is a process called double buffering which enables flicker-free animation. This process involves the use of two screens. The BOBs are drawn on the rear screen and then are pasted down on the front screen. This prevents the user from seeing any vertical drawing of the BOB as it changes shape or position. A similar technique can be used in BASIC using one screen and two windows. Let's go through this process step by step as seen in the demo program, The Dancing Lemons:

1. **Set up a screen.** In the demo a low resolution 8 color screen is used.

2. **Define two windows.** The windows must be the same size and have the same contents. The rear window must include the refresh type value of 16 so that the contents can be remembered. In the demo windows 2 and 3 are defined. Both windows are identical in contents. Window 2 is the rear window and window 3 is the front window.

3. **Display the BOB on the rear window.** Use the WINDOW OUTPUT 2 statement and the OBJECT commands to display the BOB on the rear window. Use the GET command to grab a section of the rear window. In the demo a% is an array that was dimensioned at the beginning of the program that will be used with the GET statement.

4. **Display the flicker-free BOB in the front window.** Use the PUT statement with the PSET command to put the BOB on the front window after you have issued a WINDOW OUTPUT 3 statement.

5. **Repeat the process with different BOB shapes.** This will enable you to do any animation you want to do.

At first this may seem confusing, so let's look at what we are doing in more detail. When the WINDOW OUTPUT command puts us at WINDOW 2, we are still seeing WINDOW 3. However, any graphics commands will now take place on WINDOW 2. Thus, we can use any of the OBJECT statements to put our BOBs on WINDOW 2. We can't see them because we are still looking at WINDOW 3. Believe me, the BOBs are on the rear window flickering away. In reality the BOBs actually become a part of the bitmap on the rear window. Thus we can use a GET statement to grab part of the window. The demo grabs a section nearly the entire width of the window across the middle of the window. This allows for BOB overlapping. The WINDOW INPUT 3 command makes window 3, the window we are looking at, the active window. By using the PUT statement along with PSET, we can stamp what we grabbed on the rear window onto the front window. We actually have not

BOBS IN AMIGA BASIC

By James C. Hilty

put a BOB on the front window, but a section of the rear window. Since both windows have the same background, the PSET function allows us to preserve the background as the BOBs move and are animated. It is a near-foolproof animation technique.

Sometimes to gain an advantage you have to accept a disadvantage. This technique, as does double buffering in C, uses a lot of memory, merely because you have to use two windows. You also have to be sure which window you have currently active. You must remember to PUT the array from the rear window in the same spot on the front window. Is all this "double" work worth it? The answer is yes. You can achieve flicker-free animation with surprising results.

If you are still not convinced, or still slightly confused on the technique, then type in the demo program. The animation portion of the program is very short; however, there are a few DATA statements. These DATA statements are the BOB shapes for the demo. The BOBs are very large, as I wanted to show you that even huge BOBs can be animated in BASIC with no flicker. Go ahead and type the DATA statements. The BOBs were created with *Deluxe Paint II*, and I think that you will enjoy these dancing lemons made with three BOB shapes. As for converting BOB files to DATA statements, see Mike Davila's *Object Data Creator* in the November issue.

I'm hoping that you find this technique useful. I welcome any comments that you might have, and also welcome any questions about Amiga BASIC animation that you might have for future articles. Write to me care of *Ahoy!'s AmigaUser*, 45 West 34th Street—Suite 500, New York, NY 10001. Enjoy your Amiga, but don't throw out that 64! □

WARNING!

Don't come crying to us if you attempt to enter this program without first reading your Amiga BASIC manual and familiarizing yourself with your computer's screen editor!

If, however, you've done the necessary background work and still encounter difficulty in entering *Flicker-Free BOBs*, call 212-239-6089 (if busy or no answer after three rings, 212-239-0855) between 8:30 and 4:30 EST. Our technical editors will be glad to help.

```
' FLICKER FREE BOBS IN AMIGA BASIC
' JAMES C. HILTY-10/88
' DEMO PROGRAM
' THE DANCING LEMONS

'Define everything as an integer.
DEFINT a-z
'Clear more memory for BASIC program.
CLEAR ,25000
CLEAR ,60000&
'Array for grabbing section of rear window.
DIM a%(4000)
'Load BOB shape data into strings.
CLS:PRINT"Loading BOB data....about 30 seconds."
GOSUB LoadBobData

InitScreen:
  'Low-res, 8 color screen.
  SCREEN 2,320,200,3,1
  'Back window with refresh option.
  WINDOW 2,"",(0,0)-(311,185),16,2
   GOSUB DrawWindow
  WINDOW 3,"",(0,0)-(311,185),0,2 'Front window.
   'Both windows are identical.
   GOSUB DrawWindow
   GOSUB BobSetUp 'Initialize BOBS.
   dir=1
Main:
  WINDOW OUTPUT 2  'Back window.
  OBJECT.CLOSE
  OBJECT.SHAPE 1,Lemon2$:OBJECT.SHAPE 2,1
  OBJECT.X 1,x1:OBJECT.Y 1,y1
  OBJECT.X 2,x2:OBJECT.Y 2,y1:OBJECT.ON
  GET(10,66)-(300,130),a%
  'Draw on front window.
  WINDOW OUTPUT 3:PUT(10,66),a%,PSET
  GOSUB Direction

  WINDOW OUTPUT 2  'Next frame.
  OBJECT.CLOSE
  OBJECT.SHAPE 1,Lemon3$:OBJECT.SHAPE 2,1
  OBJECT.X 1,x1:OBJECT.Y 1,y1-4
  OBJECT.X 2,x2:OBJECT.Y 2,y1-4:OBJECT.ON
  GET(10,66)-(300,130),a%
  WINDOW OUTPUT 3:PUT(10,66),a%,PSET
  GOSUB Direction

  WINDOW OUTPUT 2
```

```
  OBJECT.CLOSE
  OBJECT.SHAPE 1,Lemon2$:OBJECT.SHAPE 2,1
  OBJECT.X 1,x1:OBJECT.Y 1,y1
  OBJECT.X 2,x2:OBJECT.Y 2,y1:OBJECT.ON
  GET(10,66)-(300,130),a%
  WINDOW OUTPUT 3:PUT(10,66),a%,PSET
  GOSUB Direction

  WINDOW OUTPUT 2
  OBJECT.CLOSE
  OBJECT.SHAPE 1,Lemon1$:OBJECT.SHAPE 2,1
  OBJECT.X 1,x1:OBJECT.Y 1,y1
  OBJECT.X 2,x2:OBJECT.Y 2,y1:OBJECT.ON
  GET(10,66)-(300,130),a%
  WINDOW OUTPUT 3:PUT(10,66),a%,PSET
  GOSUB Direction

  GOTO Main  'Restart animation

Direction:
  IF dir=1 THEN
   x1=x1-4:x2=x2-4
   IF x1<10 THEN dir=0
  END IF
  IF dir=0 THEN
   x1=x1+4:x2=x2+4
   IF x2>255 THEN dir=1
  END IF
  RETURN

LoadBobData:
  FOR x=1 TO 1490
  READ ob:Lemon1$=Lemon1$+CHR$(ob):NEXT x
  FOR x=1 TO 1124
  READ ob:Lemon2$=Lemon2$+CHR$(ob):NEXT x
  FOR x=1 TO 1562
  READ ob:Lemon3$=Lemon3$+CHR$(ob):NEXT x
  RETURN

DrawWindow:
  PALETTE 0,0,0,0
  PALETTE 1,.8,.6,.33
  PALETTE 2,.8,.3,0
  PALETTE 3,.93,.2,0
  PALETTE 4,1,1,1
  PALETTE 5,0,0,1
  PALETTE 6,1,1,.13
  PALETTE 7,0,0,0
  COLOR 3,0
  PRINT"Ahoy!'s AmigaUser Presents...."
  PRINT"Flicker Free BOB animation in"
  PRINT"AmigaBASIC -By J.C. Hilty."
  COLOR 5,0
  LINE(40,120)-(280,120)
  LINE(280,120)-(308,130)
  LINE(308,130)-(10,130)
  LINE(10,130)-(40,120):LINE(10,130)-(308,140),,bf
  LOCATE 10,14:PRINT"TONIGHT ONLY!!"
  LOCATE 11,11:PRINT"THE DANCING LEMONS!!"
  RETURN

BobSetUp:
  WINDOW OUTPUT 2:OBJECT.SHAPE 1,Lemon1$
   OBJECT.X 1,120:OBJECT.Y 1,70
  OBJECT.SHAPE 2,1:OBJECT.X 2,200
  OBJECT.Y 2,70:OBJECT.ON
  GET(10,66)-(300,130),a%
  WINDOW OUTPUT 3:PUT(10,66),a%,PSET
  x1=120:x2=200:y1=70
  RETURN

'lemon 1 BOB data - size 1490 bytes
DATA 0,0,0,0,0,0,0,0,0,0,0,3
DATA 0,0,0,56,0,0,0,61,0,24,0,7
DATA 0,0,0,0,0,0,0,0,0,0,0,1
DATA 128,12,0,0,0,0,0,3,224,31,0,0
DATA 0,0,0,7,248,63,192,0,0,0,0,7
DATA 254,7,240,0,0,0,0,1,255,225,252,0
DATA 0,0,0,0,127,240,127,0,0,0,0,0
DATA 31,252,63,192,0,0,0,0,7,255,15,192
DATA 0,0,0,0,1,131,135,128,0,0,0,0
DATA 0,1,225,0,0,0,0,0,0,0,249,0
DATA 0,0,0,0,0,0,126,0,0,0,0,32
DATA 0,120,31,128,0,0,0,64,12,132,7,224
DATA 0,0,0,0,61,2,97,248,0,0,0,0
DATA 25,2,120,126,0,0,0,2,17,14,60,30
DATA 0,0,0,4,9,30,30,6,0,0,0,0
DATA 1,30,31,0,0,0,0,0,0,156,59,0
DATA 0,0,0,0,0,120,49,128,0,0,0,0
DATA 0,0,97,128,0,0,0,0,0,64,192,192
DATA 0,0,0,0,0,193,0,64,0,0,0,0
DATA 3,0,0,96,0,0,0,0,12,0,0,96
DATA 0,0,0,0,48,0,0,96,0,0,0,1
DATA 192,0,0,96,0,0,0,14,0,0,0,96
DATA 0,0,0,0,0,0,0,96,0,0,0,0
DATA 0,0,0,224,0,0,0,0,0,6,0,224
DATA 0,0,0,0,0,9,0,224,0,0,0,0
DATA 0,4,128,192,0,0,0,0,0,2,65,192
DATA 0,0,0,0,0,1,35,128,0,0,0,0
DATA 0,1,158,0,0,0,0,0,0,0,192,0
DATA 0,0,0,0,0,0,126,0,0,0,0,0
DATA 0,0,254,0,0,0,0,0,0,3,252,0
DATA 0,0,0,0,0,7,248,0,0,0,0,0
DATA 48,127,224,0,0,0,0,0,31,231,128,0
DATA 0,0,0,0,7,194,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,2,64
DATA 0,0,0,0,0,0,12,32,0,0,0,0
DATA 0,0,2,64,0,0,0,1,0,0,4,0
DATA 0,0,0,1,1,16,0,0,0,0,0,1
DATA 4,240,0,128,0,0,0,1,2,0,65,0
DATA 0,0,0,0,128,1,62,0,0,0,0,0
DATA 64,222,0,0,0,0,0,0,63,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,1,128,12,0,0
DATA 0,0,0,3,224,31,0,0,0,0,0,7
DATA 248,63,192,0,0,0,0,7,254,127,240,0
DATA 0,0,0,1,255,255,252,0,0,0,0,0
DATA 127,255,255,0,0,0,0,0,31,255,255,192
DATA 0,0,0,0,7,255,255,192,0,0,0,0
DATA 1,255,255,128,0,0,0,0,0,255,255,0
DATA 0,0,0,0,1,255,255,0,0,0,0,0
DATA 3,255,254,0,0,0,0,32,3,255,159,128
DATA 0,0,0,112,3,135,135,224,0,0,0,56
DATA 3,3,129,248,0,0,0,28,231,3,128,126
DATA 0,0,0,15,239,15,192,30,0,0,0,7
DATA 247,31,224,6,0,0,0,7,255,31,224,0
DATA 0,0,0,7,255,159,196,0,0,0,0,15
DATA 255,255,206,0,0,0,0,15,255,255,158,0
DATA 0,0,0,31,255,255,63,0,0,0,0,31
DATA 255,254,255,128,0,0,0,63,255,63,255,128
DATA 0,0,0,63,252,63,255,128,0,0,0,63
DATA 240,63,255,128,0,0,0,63,192,127,255,128
DATA 0,0,0,14,0,127,255,128,0,0,0,0
DATA 0,255,255,128,0,0,0,0,1,255,255,0
DATA 0,0,0,0,3,255,255,0,0,0,0,0
DATA 3,255,255,0,0,0,0,0,15,255,255,0
DATA 0,0,0,0,31,255,254,0,0,0,0,0
DATA 63,255,252,0,0,0,0,0,255,254,254,0
DATA 0,0,0,7,255,255,126,0,0,0,0,7
DATA 255,255,190,0,0,0,0,3,255,255,0,0
```

```
DATA 0,0,0,1,255,252,0,0,0,0,0,0
DATA 255,248,0,0,0,0,0,0,15,128,0,0
DATA 0,0,0,0,0,60,96,0,0,0,0,0
DATA 0,126,96,0,0,0,0,0,0,56,96,0
DATA 0,0,0,0,0,56,32,0,0,0,0,0
DATA 0,112,16,0,0,0,0,0,0,112,29,192
DATA 0,0,0,0,0,112,31,224,0,0,0,0
DATA 0,112,15,240,0,0,0,1,224,224,15,224
DATA 0,0,0,3,248,224,63,192,0,0,0,3
DATA 255,252,255,192,0,0,0,3,255,254,255,192
DATA 0,0,0,3,255,255,127,128,0,0,0,3
DATA 255,255,127,128,0,0,0,1,255,255,126,0
DATA 0,0,0,0,255,222,0,0,0,0,0,0
DATA 63,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,96,0,0,0,0,0,96,0,48,0,0
DATA 0,0,6,112,0,28,0,0,0,0,15,112
DATA 0,127,0,0,0,0,23,240,0,253,128,0
DATA 0,0,59,240,0,254,96,0,0,0,29,240
DATA 1,255,56,0,0,0,46,224,3,255,142,0
DATA 0,0,51,224,3,255,130,0,0,0,60,192
DATA 3,255,128,0,0,0,15,128,3,255,128,0
DATA 0,0,0,0,231,255,128,0,0,0,0,3
DATA 239,255,192,0,0,0,0,7,247,255,224,0
DATA 0,0,0,7,255,255,224,0,0,0,0,7
DATA 255,255,196,0,0,0,0,15,255,255,206,0
DATA 0,0,0,15,255,255,158,0,0,0,0,31
DATA 255,255,63,0,0,0,0,31,255,254,255,128
DATA 0,0,0,63,255,255,255,128,0,0,0,63
DATA 255,255,255,128,0,0,0,63,255,255,255,128
DATA 0,0,0,63,254,255,255,128,0,0,0,15
DATA 252,255,255,128,0,0,0,7,241,255,255,128
DATA 12,0,0,7,195,255,255,0,18,0,0,7
DATA 7,255,255,0,33,0,0,0,15,255,255,0
DATA 66,0,0,0,63,247,255,0,132,0,0,0
DATA 255,227,254,57,0,0,0,7,255,241,252,126
DATA 0,0,0,7,255,252,255,254,0,0,0,7
DATA 255,255,127,242,0,0,0,7,255,255,191,232
DATA 0,0,0,3,255,255,0,212,0,0,0,1
DATA 255,252,0,106,0,0,0,0,255,248,0,180
DATA 0,0,0,0,15,128,1,16,0,0,0,0
DATA 0,60,2,0,0,0,0,0,0,126,4,0
DATA 0,0,0,0,0,56,8,0,0,0,0,0
DATA 0,56,16,0,0,0,0,0,0,112,48,0
DATA 0,0,0,0,0,112,92,0,0,0,0,0
DATA 0,112,30,64,0,0,0,0,0,112,12,32
DATA 0,0,0,0,0,224,2,64,0,0,0,1
DATA 0,224,4,0,0,0,0,1,1,240,0,0
DATA 0,0,0,1,4,240,0,128,0,0,0,1
DATA 2,0,65,0,0,0,0,0,128,1,62,0
DATA 0,0,0,0,64,222,0,0,0,0,0,0
DATA 63,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0

'lemon 2 BOB data - size 1124 bytes.
DATA 0,0,0,0,0,0,0,0,0,0,0,3
DATA 0,0,0,39,0,0,0,61,0,24,0,7
DATA 0,0,0,0,0,0,0,0,0,63,255,248
DATA 0,0,0,63,255,248,0,0,0,63,255,248
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,63,255,248,0,0,127,255,7,255
DATA 252,0,127,254,3,255,252,0,127,252,1,255
DATA 252,0,127,248,0,255,252,0,0,0,240,0
DATA 0,0,0,25,8,0,0,0,0,122,4,192
DATA 0,0,0,50,4,240,0,0,4,34,4,120
DATA 0,0,8,18,100,60,0,0,0,2,244,62
DATA 0,0,0,1,248,118,0,0,0,0,240,67
DATA 0,0,0,0,0,3,0,0,0,0,0,1
DATA 128,0,0,0,96,0,128,0,0,0,144,0
DATA 192,0,0,0,0,0,192,0,0,0,72,0
DATA 192,0,0,1,144,0,192,0,0,2,0,0
DATA 192,0,0,12,0,0,192,0,0,16,0,1
DATA 192,0,0,96,28,1,192,0,1,128,36,1
DATA 192,0,6,0,36,1,128,0,24,0,36,3
DATA 128,0,0,0,36,7,128,0,0,0,36,7
DATA 128,0,0,0,37,15,0,0,0,0,37,158
DATA 0,0,0,0,37,252,0,0,0,0,53,248
DATA 0,0,0,0,72,240,0,0,0,96,128,64
DATA 0,0,0,63,0,0,0,0,0,15,36,0
DATA 0,0,0,1,129,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,3,128,0
DATA 0,0,0,0,0,0,0,0,0,0,7,0
DATA 0,0,0,0,80,0,0,0,0,0,168,0
DATA 0,0,0,0,24,0,0,0,0,0,16,2
DATA 0,0,0,12,0,76,0,0,0,3,254,48
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,63,255,248,0,0,0,63,255,248
DATA 0,0,0,63,255,248,0,0,0,63,255,248
DATA 0,0,0,63,255,248,0,0,0,63,255,248
DATA 0,0,127,255,255,255,252,0,127,255,255,255
DATA 252,0,127,255,255,255,252,0,127,255,255,255
DATA 252,0,0,7,255,0,0,0,0,7,15,0
DATA 0,0,0,6,7,0,0,0,1,206,7,0
DATA 0,0,7,222,7,128,0,0,15,238,103,192
DATA 0,0,15,254,247,192,0,0,15,255,255,136
DATA 0,0,31,255,255,188,0,0,31,255,255,252
DATA 0,0,63,255,255,254,0,0,63,255,255,255
DATA 0,0,127,255,255,255,0,0,127,255,255,255
DATA 0,0,127,255,255,255,0,0,127,255,255,255
DATA 0,0,127,255,255,255,0,0,127,255,255,255
DATA 0,0,127,255,255,254,0,0,63,255,255,254
DATA 0,0,63,255,255,254,0,0,63,255,255,254
DATA 0,0,31,255,255,252,0,0,31,255,255,248
DATA 0,0,31,255,255,248,0,0,15,255,254,240
DATA 0,0,15,255,254,96,0,0,7,255,254,0
DATA 0,0,3,255,254,0,0,0,1,255,203,0
DATA 0,0,0,31,129,128,0,0,0,1,1,128
DATA 0,0,0,1,36,0,0,0,0,1,129,0
DATA 0,0,0,1,192,0,0,0,0,1,220,0
DATA 0,0,0,1,220,0,0,0,0,1,206,0
DATA 0,0,0,1,206,0,0,0,0,3,135,0
DATA 0,0,0,27,135,0,0,0,0,39,135,0
DATA 0,0,0,79,231,248,0,0,0,95,255,252
DATA 0,0,0,95,255,252,0,0,0,95,255,254
DATA 0,0,0,95,255,254,0,0,0,47,255,254
DATA 0,0,0,23,255,124,0,0,0,1,252,56
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,63,255,248,0,0,0,1,252,0
DATA 0,0,0,3,254,0,0,0,0,7,255,0
DATA 0,0,0,15,255,128,0,0,0,7,255,0
DATA 0,0,0,7,255,0,0,0,0,7,255,0
DATA 0,0,1,207,255,0,0,0,7,223,255,128
DATA 0,0,15,239,255,192,0,0,15,255,255,192
DATA 0,0,15,255,255,136,0,0,31,255,255,188
DATA 0,0,31,255,255,252,0,0,63,255,255,254
DATA 0,0,63,255,255,255,0,0,127,255,255,255
DATA 0,0,127,255,255,255,0,0,127,255,255,255
DATA 0,0,127,255,255,255,0,0,127,255,255,255
DATA 0,0,127,255,255,255,0,0,127,255,255,254
DATA 0,0,63,255,253,254,0,0,63,255,252,254
DATA 0,0,63,255,252,254,0,0,31,255,253,252
DATA 0,0,31,255,253,248,0,0,31,255,253,248
DATA 0,0,15,255,252,240,0,0,15,255,252,96
DATA 0,0,7,255,252,0,0,0,3,255,252,0
DATA 0,0,1,255,252,0,0,0,0,31,254,0
DATA 0,0,0,1,254,0,0,0,0,1,254,0
```

```
DATA 0,0,63,255,219,255,224,0,0,0,58,0
DATA 16,0,0,0,0,0,16,0,0,0,68,0
DATA 16,0,0,1,206,0,240,0,0,1,206,0
DATA 0,0,0,3,135,0,0,0,0,3,135,0
DATA 0,0,0,0,7,0,0,0,0,0,7,0
DATA 0,0,0,0,80,0,0,0,0,0,168,0
DATA 0,0,0,0,24,0,0,0,0,0,16,2
DATA 0,0,0,12,0,76,0,0,0,3,254,48
DATA 0,0,0,0,0,0,0,0

'lemon 3 BOB data - size 1562 bytes.
DATA 0,0,0,0,0,0,0,0,0,0,0,3
DATA 0,0,0,59,0,0,0,64,0,24,0,7
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,48,0,0,0,0,0,0,0,248,6,0
DATA 0,0,0,0,7,192,30,0,0,0,0,0
DATA 31,6,127,0,0,0,0,0,60,31,252,0
DATA 0,0,0,0,240,127,248,0,0,0,0,3
DATA 193,255,224,0,0,0,0,7,135,255,128,0
DATA 0,0,0,3,31,254,0,0,0,0,0,0
DATA 63,248,0,0,0,0,0,0,127,224,0,0
DATA 0,0,0,0,127,0,0,0,0,0,0,1
DATA 254,0,0,0,0,0,0,7,248,0,0,0
DATA 0,0,0,31,224,0,0,0,0,0,0,127
DATA 128,240,0,0,0,0,0,254,25,8,0,0
DATA 0,0,0,120,122,4,192,0,0,0,0,32
DATA 50,4,240,0,0,0,0,4,35,132,120,0
DATA 0,0,0,8,19,196,60,0,0,0,0,0
DATA 3,228,62,0,0,0,0,0,1,232,118,0
DATA 0,0,0,0,0,240,99,0,0,0,0,0
DATA 0,0,195,0,0,0,0,0,0,129,129,128
DATA 0,0,0,0,1,130,0,128,0,0,0,0
DATA 6,0,0,192,0,0,0,0,24,0,0,192
DATA 0,0,0,0,96,0,0,192,0,0,0,3
DATA 128,0,0,192,0,0,0,28,0,0,0,192
DATA 0,0,0,0,0,0,0,192,0,0,0,0
DATA 0,0,1,192,0,0,0,0,0,48,1,192
DATA 0,0,0,0,3,200,1,192,0,0,0,0
DATA 124,8,1,128,0,0,0,0,0,240,3,128
DATA 0,0,0,4,102,0,7,0,0,0,0,7
DATA 0,0,63,0,0,0,0,0,0,0,126,0
DATA 0,0,0,0,0,0,252,0,0,0,0,0
DATA 0,1,252,0,0,0,0,0,0,7,248,0
DATA 0,0,0,0,0,15,112,0,0,0,0,0
DATA 96,254,0,0,0,0,0,0,63,255,0,0
DATA 0,0,0,0,15,228,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,4,128
DATA 0,0,0,0,0,0,24,64,0,0,0,0
DATA 0,0,4,128,0,0,0,2,0,0,8,0
DATA 0,0,0,2,2,32,0,0,0,0,0,2
DATA 9,224,1,0,0,0,0,2,4,32,2,0
DATA 0,0,0,1,0,64,124,0,0,0,0,0
DATA 129,224,0,0,0,0,0,0,126,124,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,48,0,0
DATA 0,0,0,0,0,248,6,0,0,0,0,0
DATA 7,252,30,0,0,0,0,0,31,254,127,0
DATA 0,0,0,0,63,255,252,0,0,0,0,0
DATA 255,255,248,0,0,0,0,3,255,255,224,0
DATA 0,0,0,7,255,255,128,0,0,0,0,3
DATA 255,254,0,0,0,0,0,1,255,248,0,0
DATA 0,0,0,1,255,224,0,0,0,0,0,0
DATA 127,248,0,0,0,0,0,1,255,252,0,0
DATA 0,0,0,7,251,254,0,0,0,0,0,31
DATA 231,255,0,0,0,0,0,127,135,255,0,0
DATA 0,0,0,254,7,15,0,0,0,0,0,120
DATA 6,7,0,0,0,0,0,33,206,7,0,0
DATA 0,0,0,7,223,135,128,0,0,0,0,15
DATA 239,199,192,0,0,0,0,15,255,231,192,0
DATA 0,0,0,15,255,239,136,0,0,0,0,31
DATA 255,255,156,0,0,0,0,31,255,255,60,0
DATA 0,0,0,63,255,254,126,0,0,0,0,63
DATA 255,253,255,0,0,0,0,127,254,127,255,0
DATA 0,0,0,127,248,127,255,0,0,0,0,127
DATA 224,127,255,0,0,0,0,127,128,255,255,0
DATA 0,0,0,28,0,255,255,0,0,0,0,0
DATA 1,255,255,0,0,0,0,0,3,255,254,48
DATA 0,0,0,0,7,255,254,56,0,0,0,0
DATA 7,255,254,62,0,0,0,0,127,255,254,15
DATA 192,0,0,0,63,255,252,1,192,0,0,4
DATA 127,255,248,0,0,0,0,7,255,255,192,0
DATA 0,0,0,7,255,255,128,0,0,0,0,15
DATA 255,255,0,0,0,0,0,7,255,254,0,0
DATA 0,0,0,3,255,248,0,0,0,0,0,1
DATA 255,240,192,0,0,0,0,0,31,3,192,0
DATA 0,0,0,0,0,1,192,0,0,0,0,0
DATA 0,28,192,0,0,0,0,0,0,112,192,0
DATA 0,0,0,0,0,112,96,0,0,0,0,0
DATA 0,224,96,0,0,0,0,0,0,224,59,128
DATA 0,0,0,0,0,224,63,192,0,0,0,0
DATA 0,224,31,224,0,0,0,3,193,192,31,192
DATA 0,0,0,7,241,192,127,128,0,0,0,7
DATA 255,231,255,128,0,0,0,7,255,255,255,128
DATA 0,0,0,7,255,255,255,0,0,0,0,7
DATA 255,254,127,0,0,0,0,3,255,252,252,0
DATA 0,0,0,1,255,252,0,0,0,0,0,0
DATA 126,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,6,0,0,0,0,0,0
DATA 0,28,0,0,0,0,0,0,0,112,0,0
DATA 0,0,0,0,1,192,0,0,0,0,0,0
DATA 7,0,0,0,0,0,0,0,28,0,0,0
DATA 0,0,0,0,48,0,0,0,0,0,0,0
DATA 96,0,0,0,0,0,0,0,0,248,0,0
DATA 0,0,0,0,1,252,0,0,0,0,0,0
DATA 3,254,0,0,0,0,0,0,7,255,0,0
DATA 0,0,0,0,7,255,0,0,0,0,0,0
DATA 7,255,0,0,0,0,0,0,7,255,0,0
DATA 0,0,0,1,207,255,0,0,0,0,0,7
DATA 223,255,128,0,0,0,0,15,239,255,192,0
DATA 0,0,0,15,255,255,192,0,0,0,0,15
DATA 255,255,136,0,0,0,0,31,255,255,156,0
DATA 0,0,0,31,255,255,60,0,0,0,0,63
DATA 255,254,126,0,0,0,0,63,255,253,255,0
DATA 0,0,0,127,255,255,255,0,0,0,0,127
DATA 255,255,255,0,0,0,0,127,255,255,255,0
DATA 0,0,0,127,253,255,255,0,0,0,0,31
DATA 249,255,255,0,0,0,128,15,227,255,255,0
DATA 0,0,64,15,135,255,254,0,0,0,32,14
DATA 15,255,254,0,0,0,16,0,31,251,254,0
DATA 3,128,9,192,127,249,254,0,215,128,4,48
DATA 255,241,252,1,223,0,3,255,230,3,248,0
DATA 63,192,0,127,0,255,192,0,31,64,1,252
DATA 127,255,128,0,9,0,0,127,255,255,0,0
DATA 4,0,1,151,255,254,0,0,0,0,0,11
DATA 255,248,0,0,0,0,0,5,255,240,192,0
DATA 0,0,0,2,31,3,192,0,0,0,0,1
DATA 0,1,192,0,0,0,0,0,128,4,192,0
DATA 0,0,0,0,64,0,192,0,0,0,0,0
DATA 32,0,96,0,0,0,0,0,32,32,96,0
DATA 0,0,0,1,64,96,56,0,0,0,0,0
DATA 128,224,60,128,0,0,0,0,0,224,24,64
DATA 0,0,0,0,1,192,4,128,0,0,0,2
DATA 1,192,8,0,0,0,0,2,3,224,0,0
DATA 0,0,0,2,9,224,1,0,0,0,0,2
DATA 4,32,2,0,0,0,0,1,0,64,124,0
DATA 0,0,0,0,129,224,0,0,0,0,0,0
DATA 126,124,0,0,0,0,0,0,0,0,0,0
DATA 0,0
```

FLOTSAM



Send your comments on any aspect of Amiga computing to *Flotsam*, c/o *Ahoy!'s AmigaUser*, Ion International Inc., 45 W. 34th St.—Suite 500, New York, NY 10001. Only letters that are typed and double spaced will be considered for inclusion.

In an effort to encourage the exchange of Amiga artwork in the Amiga community, and to put together the definitive collection of Amiga picture files, we have started a free HAM and IFF picture trading post. Here's all you have to do to begin enjoying our Amiga art library. Send us a 3.5" disk containing some of your favorite picture files, along with return postage for your disk. We will add your pictures to the library, fill your disk up with pictures that others have sent, and mail it back to you. Feel free to send as many, or as few, pictures as you like, but we'd like to ask you to send as many as you can in order to help the library grow. If you send multiple disks, all of them will, of course, be filled with other pictures and returned to you. Again, don't hesitate to send just a few files if you don't have many; your disk will still be filled to capacity when we return it to you. I would like to emphasize that this service is completely free of charge, except for return postage. If every interested reader will trade just one disk of pictures with us, we will be well on our way to our goal of compiling the definitive Amiga art collection.

Our address is: POCUG, Amiga Art Exchange, 1244 Thomasina Drive, Port Orange, FL 32019-7437.

—Rick Stidham, President
Port Orange Commodore User Group

I am in the process of purchasing an Amiga 1000, and would to know if it's all right to buy a refurbished one. I need to know the drawbacks and limitations of a refurbished Amiga 1000, in terms of hardware, software, peripherals—and is it 100% compatible with the original Amiga 1000?

Keep up the good work you're doing on all aspects of Amiga computing.

—Albert Bannis
Goodwill, Dominicas, W.I.

With most used products, the buyer never knows the past history of the goods he is purchasing. This can have a lot to do with the condition of the product. If the Amiga you are buying was used on a BBS, the wear and tear on the computer and its components would be much greater than if it were subjected to only normal use. You might end up buying a lemon. On the other hand, the Amiga that you buy might have been used infrequently. We recently became aware of an Amiga 1000 with a Sidecar for $500.00. The seller of the machine used the Amiga only a few times, then put the machine in his closet.

If you are willing to take the risk for the savings in cost, it might be worth your while. Also remember that you might have compatibility problems with any new software and peripherals that enter the Amiga market. There have been several revisions in the hardware, such as the new Fat Agnus custom animation chip, and the redesigned I/O connectors. Trying to find a printer cable for the 1000 might be difficult since it does not use the standard IBM PC type connectors.

As a new Amiga owner, I find your magazine to be the best Amiga publication available. The part I like best is the indepth reviews of software, including games and productivity programs. With the price of software being as high as it is, it really pays off to learn about the good and bad points of a product before you buy it. I would like to see even more reviews in future issues.

I would also like to see articles or "user clinics" for certain categories of software products, such as paint programs, music programs, and animation programs. Each month you could tell readers, now that you have *Deluxe Paint*, or a ray tracing program, etc., here are some of the things you can do with the program, and how. Go beyond the manual and really explore the possibilities.

Thanks for a great magazine, and I hope you seriously consider my suggestion of helping your readers to unlock the power of some of the Amiga's software. —Chris Dayley
Morgan Hill, LA

I just finished reading your November issue. I buy your magazine, and every other magazine that is Commodore- or Amiga-related (even foreign Amiga magazines when I can find them). You have invited reader feedback—that's why I'm writing.

Some people like program reviews. So do I, but the reviews tend to be mostly on games. I would like to see a greater percentage of reviews of hardware and serious programs for the Amiga. Because such products usually cost much more than games, one can really waste a great deal of money buying hardware or software that doesn't live up to Amiga standards or fully utilize the capabilities of the Amiga. Every magazine I've bought has run a review of *The Three Stooges, Test Drive,* and many other games. Do we really need to see another review of another game that every other magazine is reviewing too?

Here's an idea for a feature that no other Amiga magazine is running. I would very much like to see construction articles. Many of the people I know who own a computer have a background in electronics or work in electronics. Amiga owners are paying way too much for add-on hardware such as floppy drives, hard drives, expansion boards, etc. I think an article on how to hook up a 3½" drive (that can be had for $50-$70) to the Amiga would create great interest. The same goes for an article on hooking up an IBM hard drive (about half the cost of an Amiga hard drive) for use on the Amiga. (The Amiga User's Group at the University of Cincinnati is using IBM ST-506 hard drives on their Amigas.) Those of us that know electronics could, with the additional information supplied by a construction article, save a great deal of money and learn something in the process. Please think about my idea and give it serious consideration.

—C. David McConnell
Middletown, OH

REVIEWS

Continued from page 48

versions are excellent.

One other note about color. Although *ProScript's* documentation is a bit unclear on this point, the fact is that ProScript doesn't support color PostScript. That's not a problem. Color PostScript printers currently cost $25,000.00.

ProScript does its thing somewhat slowly. Printing (to a disk file) a four-page document with several font changes, a single bit-mapped graphic and one line of a non-PostScript font took 36 minutes. The resulting PostScript text file (on floppy disk) was more than 556,000 bytes. After removing the halftone and the custom font from the document, *ProScript* took several minutes to print a two-page file, which resulted in only 19,000 bytes of PostScript instructions. These times are not prohibitive, however. Besides, PostScript printers tend to take their own sweet time generating a document after the "printing" operation from the computer is done.

The reviewer's viciously designed test document worked perfectly when printed on an Apple LaserWriter II printer, which churned out the two test pages without complaint. It also printed flawlessly on a Linotronic L300 laser typesetter (at 2540 dots per inch!), even though the Linotronic is known for its pickiness on what it accepts. Nevertheless, the code that *ProScript* generates is not EXACTLY vanilla PostScript code, nor does it quite match what a professional typographer is accustomed to seeing, and some of the typographers' standard PostScript utilities wouldn't work on the *ProScript*-generated code.

In addition to page rotation, scaling, and other fine points of the PostScript language, *ProScript* supports merge printing, just as *ProWrite* does. Imagine! Laserprinted form letters!

Limitations

ProScript's limitations mainly have to do with *ProWrite 2.0.* If you're just putting documents out to a laser printer, they'll be gorgeous, and you'll be happy as a clam. On the other hand, if you intend to have a print shop "run off some copies on the press," you (or the shop) will have to do some finagling to get camera-ready work out of *ProWrite*/ProScript documents containing color. A little experience will allow most anybody to accomplish the task, usually within the *ProWrite* environment, however.

The other main limitation is fonts. Although *ProScript* provides a few PostScript-compatible Amiga screen fonts, it supplies only 8-point to 24-point versions of those faces, and no facility for generating others. If you have *Professional Page,* you can use its ".metric" files and its Adobe (Adobe owns PostScript) screen fonts. However, if you have *Professional Page*, you have little need for *ProScript* in the first place. The ".metric" files from *PageSetter* won't work, as they're in a different format from the *Professional Page* ones.

The Adobe fonts on the new AmigaDOS 1.3 Enhancer won't work, either. They're mapped at the wrong resolution for the Amiga screen.

What It Isn't

Kerning, leading, tracking, and other type considerations are among the many esoterics of the printing of the printed word that *ProWrite* doesn't deal with. To its credit, *ProScript* uses PostScript's features very well to do some compensating for these shortcomings. However, a professional's eye will find many persnickety little faults with the results. Programs which do permit user control of the finer typographic factors are most difficult to use and much more expensive.

Summary

With many thoughtful amenities to recommend it, *ProScript* does its job reliably and well, and with maximum user friendliness. In its price range, the *ProWrite*-PostScript duo is hard to beat, and it's especially easy to figure out. More capabilities cost more money and take more time to learn. Isn't that always the case!

(New Horizons Software, maker of both programs, offers *ProWrite 1.0* and *ProWrite 2.0* upgrades for $20 or $10, depending on when the product was bought. Contact customer support for further information.)

New Horizons Software, Box 43167, Austin, TX 78745 (phone: 512-329-6215). *—Jay Gross*

Circle #195 on Reader Service Card

The March issue of Ahoy!'s AmigaUser will go on sale February 7.

AMIGAVADERS

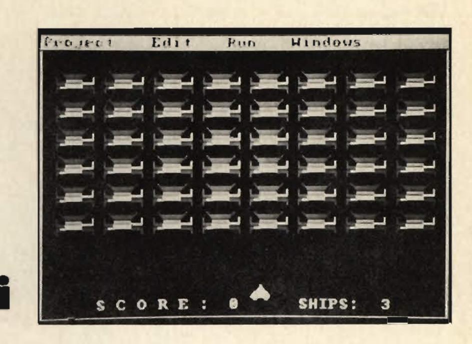
Warning! See page 60's caveat concerning entering programs from *Ahoy!'s AmigaUser* without first reading your Amiga BASIC manual!

By

Paul Maioriello

and

George Sokolowski



The reaction to this program by the typical reader will probably be something like: "Yawn, ho hum, another *Space Invaders* knockoff." If you say that, you will be only partly correct. It is in fact a game based on the *Space Invaders* theme. What makes it different is that it is written totally in BASIC (Amiga BASIC to be specific). This may not seem like much at first, but think back to the last time you saw a *Space Invaders* type game written totally in BASIC. I have been playing with microcomputers since the days when the Commodore 64 cost $595, and I do not believe I have ever seen a program that animates as many objects as this ever written in BASIC.

The tricky part to writing such a game is, how do you keep so many objects moving smoothly? I think it may not be possible to write this game in BASIC on any machine other than the Amiga. Lest you think that I say this only because I am an Amiga owner, let me hasten to add that I also own and use on a regular basis a Commodore 128, a VIC 20 (remember them?), and an AT&T PC6300.

What makes this program possible is the amazing graphics capabilities of the Amiga. The program makes extensive use of the BASIC scroll command. This command allows you to scroll a defined area within the current output window. This area is defined by specifying the upper left and lower right coordinates, and the number of pixels to scroll in horizontal and vertical directions. In this case the scrolled area encompasses all the invaders. This entire area is scrolled in horizontal and vertical directions to correspond with the movements required in this type of game. Further examination of this program will reveal how the Amiga BASIC sprite collision routines are used. The ship shooting from the bottom, the fired missile, and the missiles being fired by the invaders are all sprites. Collisions between all sprites are detected, as well as collisions between sprites and the top and bottom of the window. The collision handler routine is called handleit.

The program also uses Blitter Objects (BOBs). The invaders start out as a BOB. This BOB is then captured into an array and placed into the window enough times to have a whole complement of invaders. This is done in the routines stamp.monsters and init.monster (gee; aren't named subroutines fun?). This program also features the structured style that is possible with BASIC on the Amiga. In addition, the dual form of the IF statement is also worth noting. If you have a block of statements to be executed, then the END IF clause serves to nicely delimit them. If there is only a single statement, however, it can be put right on the same line as the IF. This latter form also seems to speed up program execution to a fair extent. This is always of concern when writing action type games.

To create your own copy of *Amigavaders*, simply type in the listing *exactly* as it appears. Do not try to change the structure of the program. Remember the IF discussion above?

The following two statements represent very different logic.

1. IF A = 0 THEN A1 = A:B1 = B
2. IF A = 0 THEN A1 = A:B1 = B

In statement 1 B1 gets set to B only if A equals zero. In statement 2, however, B1 will ALWAYS get set to B regardless of what the value of A is. If you wanted to preserve the form of statement 2 but keep the logic of statement 1, you could have to code it as follows:

```
IF A = 0 THEN A1 = A
   B1 = B
END IF
```

While all this may seem a little strange in the beginning, it really catches on quickly and seems to make a lot of sense once it is understood. It quickly becomes difficult to go back to Commodore BASIC 2.0 on the 64. In any case, you can now see why it is important to type in the program *exactly*.

Once you have typed it in, save it using an appropriate name. To run the program either select RUN from the BASIC menu or type run from the BASIC output window. The program will open its own screen and window. There really is not much required in the way of instructions. After all, how many people DON'T know how to play *Space Invaders?* I hope you enjoy the game, and let's all keep trying to find more things that the Amiga does best. ☐

PROGRAM LISTING BEGINS ON FOLLOWING PAGE

```
'**********************************************************
'* AMIGAVADERS By Paul Maioriello and George Sokolowski *
'**********************************************************
GOSUB init.stuff
ON COLLISION GOSUB handleit:COLLISION ON
GOSUB hold.it
COLLISION OFF:SCREEN CLOSE 1:STOP

hold.it:
WHILE (men% > 0 AND l.ry% < 160 AND invad.left% > 0 AND again%=t%)
  IF shot.on%=t% AND POINT(OBJECT.X(3),OBJECT.Y(3)) <> 0 THEN GOSUB cmap
  joy%=STICK(2)
  IF r%=t% THEN
    IF r.idx.cnt%=0 THEN r.idx%=r.idx%-1:r.idx.cnt%=c.cnt%(r.idx%):e%=e%-35
    IF e% > rt.lim% THEN r%=f%:GOSUB drop:e%=rt.lim%-(36*(r.idx%-l.idx%))
    SCROLL (u.l%,u.l%)-(l.rx%,l.ry%),de%,0:e%=e%+(de%+1):up.lx%=up.lx%+de%
  ELSE
    IF l.idx.cnt%=0 THEN l.idx%=l.idx%+1:l.idx.cnt%=c.cnt%(l.idx%):e%=e%+35
    IF e% < le.lim% THEN r%=t%:GOSUB drop:e%=le.lim%+(36*(r.idx%-l.idx%))
    SCROLL (u.l%,u.l%)-(l.rx%,l.ry%),-de%,0:e%=e%-(de%+1):up.lx%=up.lx%-de%
  END IF
  IF shot.on%=t% AND POINT(OBJECT.X(3),OBJECT.Y(3)) <> 0 THEN GOSUB cmap
  IF stime = 9 THEN SOUND 25,5,55,0:SOUND 40,4,55,1:stime=0
  stime = stime+1
  IF object4%=f% THEN
    rfx%=INT(RND(1)*(rt.lim%-le.lim%))+le.lim%
    rfy%=INT(RND(1)*(l.ry%-(l.ry%-36)))+l.ry%-36
    IF POINT(rfx%,rfy%)<>0 THEN
      OBJECT.X 4,rfx%:OBJECT.Y 4,rfy%
      OBJECT.VY 4,48:OBJECT.ON 4:OBJECT.START 4:object4%=t%
    END IF
  END IF
  IF shot.on%=t% AND POINT(OBJECT.X(3),OBJECT.Y(3)) <> 0 THEN GOSUB cmap
  IF joy%=1 AND ship.pos% < 296 THEN
    ship.pos%=OBJECT.X(2):OBJECT.X 2,ship.pos%+4:SOUND 50,.92,255,2
  ELSE
    IF joy%= -1 AND ship.pos% > 4 THEN
      ship.pos%=OBJECT.X(2):OBJECT.X 2,ship.pos%-4:SOUND 50,.92,255,2
    END IF
  END IF
  IF shot.on%=f% AND STRIG(2) = -1 THEN
    OBJECT.Y 3,166:OBJECT.X 3,OBJECT.X(2):OBJECT.VY 3,-57
    FOR f=110 TO 1910 STEP 600:SOUND f,.25,255,0:NEXT f
    OBJECT.ON 3:OBJECT.START 3:shot.on%=t%
  END IF
WEND
IF invad.left% > 0 THEN
  FOR i=1 TO 20
    OBJECT.OFF 2
    OBJECT.ON 2
  NEXT i
  SAY(TRANSLATE$("they got me!"))
  FOR i=1 TO 10
    OBJECT.OFF 2
```

```
    OBJECT.ON 2
  NEXT i
  men%=men%-1
  LOCATE 23,34:PRINT men%;
END IF
IF men% > 0 THEN
  GOSUB init.monsters
  GOTO hold.it
ELSE
  GOSUB wrapper
  IF again%=t% THEN
    GOTO hold.it
  ELSE
    RETURN
  END IF
END IF

drop:
IF row.hit%(bot.row%) = 0 THEN
  bot.row%=bot.row%-1:l.ry%=l.ry%-20:delta=delta+.2:de%=de%+delta
  rt.lim%=rt.lim%-2:le.lim%=le.lim%+2
END IF
IF shot.on%=t% AND POINT(OBJECT.X(3),OBJECT.Y(3)) <> 0 THEN GOSUB cmap
SCROLL (u.l%,u.l%)-(l.rx%,l.ry%),0,d.d%:up.ly%=up.ly%+d.d%:l.ry%=l.ry%+d.d%
RETURN

cmap:
IF (OBJECT.Y(3) < 13 OR man.hitx% < 0 OR man.hity% < 0) THEN RETURN
man.hitx%=INT((OBJECT.X(3) - up.lx%)/37)
man.hity%=INT((OBJECT.Y(3) - up.ly%)/20):map%(man.hitx%,man.hity%)=0
x1%=up.lx%+(man.hitx%*37):y1%=up.ly%+(man.hity%*20)
x2%=(up.lx%+(man.hitx%*37)+36):y2%=(up.ly%+(man.hity%*20)+16)
LINE(x1%,y1%)-(x2%,y2%),0,bf:OBJECT.OFF 3:OBJECT.STOP 3
LOCATE 23,18:score%=score%+10:PRINT score%;
c.cnt%(man.hitx%) = c.cnt%(man.hitx%) -1
IF c.cnt%(man.hitx%)=0 THEN
  delta=delta+.2:de%=de%+delta:le.lim%=le.lim%+2:rt.lim%=rt.lim%-2
END IF
IF man.hitx%=l.idx% THEN l.idx.cnt%=l.idx.cnt%-1
IF man.hitx%=r.idx% THEN r.idx.cnt%=r.idx.cnt%-1
row.hit%(man.hity%)=row.hit%(man.hity%)- 1
invad.left%=invad.left%-1:shot.on%=f%
RETURN

handleit:
WHILE COLLISION(0) <> 0
  a%=COLLISION(0):b%=COLLISION(a%)
  IF (a%=4 AND b%=-3) THEN OBJECT.OFF 4:object4%=f%
  IF (a%=3 AND b%=-1) THEN OBJECT.OFF 3:OBJECT.STOP 3:shot.on%=f%
  IF (a%=2 AND b%=4) OR (a%=4 AND b%=2) THEN
    FOR i=1 TO 10
      OBJECT.OFF 2:OBJECT.ON 2
    NEXT i
    SAY(TRANSLATE$("he got me"))
```

```
    men%=men%-1:OBJECT.STOP 4
    OBJECT.OFF 4:object4%=f%
    LOCATE 23,34:PRINT men%;
  END IF
  IF (a%=4 AND b%=3) OR (a%=3 AND b%=4) THEN
    OBJECT.OFF 3:OBJECT.OFF 4:object4%=f%:shot.on%=f%
  END IF
  IF men%=0 THEN
    GOSUB wrapper
    IF again%=f% THEN
      SCREEN CLOSE 1
      STOP
    END IF
  END IF
WEND
RETURN

wrapper:
CLS
PRINT "G A M E   O V E R"
IF score% > hscore% THEN
  hscore%=score%:PRINT "YOU GOT A NEW HIGH SCORE: ";:PRINT hscore%
ELSE
  PRINT "HIGH SCORE SO FAR IS ";:PRINT hscore%
END IF
INPUT "do you want to play again";y$
IF y$="y" THEN
  again%=t%
  GOSUB init.monsters
  men%=3:score%=0
  LOCATE 23,1:PRINT "                    [53 SPACES]                    ";
  LOCATE 23,6:PRINT "S C O R E :";
  LOCATE 23,26:PRINT "SHIPS: ";:PRINT men%;
ELSE
  again%=f%
END IF
RETURN

init.window:
WINDOW 2,"      AmigaUser's AMIGAVADERS",(0,0)-(311,186),0,1
LOCATE 23,1:PRINT "By Paul Maioriello & George Sokolowski";
RETURN

stamp.monster:
GET (1,1)-(32,32),monster.array%
OBJECT.OFF 1
GOSUB init.monsters
score%=0
RETURN

init.monsters:
up.lx%=1:up.ly%=1:1.rx%=320:1.ry%=121:bot.row%=5
invad.left%=48:de%=2:e%=288:delta=0:le.lim%=37:rt.lim%=300
bottom.limit%=200:d.d%=1:stime=9:r%=t%:object.4%=f%
```

```
again%=t%:OBJECT.OFF 3,4:shot.on%=f%:object4%=f%
CLS
LOCATE 23,6:PRINT "S C O R E : ";:PRINT score%;
LOCATE 23,26:PRINT "SHIPS: ";:PRINT men%;
FOR z=1 TO 120 STEP 20
  FOR x=1 TO 304 STEP 38
    PUT (x,z),monster.array%
  NEXT x
NEXT z
l.idx.cnt%=6:r.idx.cnt%=6:l.idx%=0:r.idx%=7
FOR i=0 TO 7
  c.cnt%(i)=6
  row.hit%(i)=8
NEXT i
FOR i=0 TO 7
  FOR j=0 TO 5
    map%(i,j)=1 ' 1 means the monster is alive
  NEXT j
NEXT i
RETURN

init.stuff:
RANDOMIZE TIMER
DIM monster.array%(600):DIM map%(8,6):DIM rect%(255):DIM sawwav%(255)
DIM c.cnt%(8):DIM row.hit%(8):object4%=f%
FOR amp%=0 TO 63
  sawwav%(amp%)=amp% * 2
  sawwav%(amp%+128)=sawwav%(amp%)
  sawwav%(amp%+64)=-128+amp% * 2
  sawwav%(amp%+192)=sawwav*(amp%+64)
NEXT amp%
FOR i=0 TO 255
  IF i < 128 THEN
    rect%(i)=127
  ELSE
    rect%(i)=-128
  END IF
NEXT i
WAVE 0,rect%:WAVE 1,rect% ' voices for invaders
WAVE 2,sawwav% ' voice for when shooter moves left and right
WAVE 3,sawwav% ' voice for when shooter shoots
t%=1:f%=0:men%=3:rfx%=0:rfy%=0:hscore%=0
'*************************************************************************
'* lets set up the lo-res non-interlaced screen                          *
'* and our full screen window                                            *
'*************************************************************************
GOSUB init.screen
GOSUB init.window
GOSUB set.colors
GOSUB load.objects
'*************************************************************************
'* now setup for the rubber stamp effect into variable monster.array%    *
'*************************************************************************
GOSUB stamp.monster
```

```
RETURN

set.colors:
PALETTE 0,0,0,0         ' color-id 0 is black (amiga uses color-id 0 for bkgd)
PALETTE 1,.93,.2,.67
PALETTE 2,1,.87,.13
PALETTE 4,1,1,1
RETURN

init.screen:
SCREEN 1,320,200,2,1
RETURN

load.objects:
build.invader:
 READ a
 shap$=""
loop1:
 IF a < 0 THEN GOTO loop1.x
 shap$=shap$+CHR$(a):READ a
 GOTO loop1
loop1.x:
 OBJECT.SHAPE 1,shap$
 OBJECT.ON 1

build.ship:
 READ a
 shap$=""
loop2:
 IF a < 0 THEN GOTO loop2.x
 shap$=shap$+CHR$(a):READ a
 GOTO loop2
loop2.x:
 OBJECT.SHAPE 2,shap$
 OBJECT.Y 2,174
 OBJECT.ON 2

build.bullet:
 READ a
 shap$=""
loop3:
 IF a < 0 THEN GOTO loop3.x
 shap$=shap$+CHR$(a):READ a
 GOTO loop3
loop3.x:
 OBJECT.SHAPE 3,shap$

build.hitter:
 READ a
 shap$=""
loop4:
 IF a < 0 THEN GOTO loop4.x
 shap$=shap$+CHR$(a):READ a
 GOTO loop4
```

```
loop4.x:
 OBJECT.SHAPE 4,shap$

RETURN

' invader data
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 3 , 0 , 0 , 0 , 32
DATA 0 , 0 , 0 , 32 , 0 , 24 , 0 , 7
DATA 0 , 0 , 16 , 0 , 0 , 16 , 8 , 0
DATA 0 , 32 , 4 , 0 , 0 , 64 , 3 , 255
DATA 255 , 128 , 1 , 255 , 255 , 0 , 64 , 255
DATA 254 , 2 , 64 , 0 , 0 , 2 , 64 , 0
DATA 0 , 2 , 64 , 0 , 0 , 2 , 127 , 128
DATA 3 , 254 , 127 , 255 , 255 , 254 , 0 , 127
DATA 252 , 0 , 127 , 255 , 255 , 254 , 127 , 128
DATA 3 , 254 , 64 , 0 , 0 , 2 , 64 , 0
DATA 0 , 2 , 64 , 0 , 0 , 2 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 16 , 0 , 0 , 16 , 8 , 0
DATA 0 , 32 , 4 , 0 , 0 , 64 , 3 , 255
DATA 255 , 128 , 1 , 255 , 255 , 0 , 64 , 255
DATA 254 , 0 , 64 , 0 , 0 , 0 , 64 , 127
DATA 252 , 0 , 64 , 127 , 252 , 0 , 127 , 128
DATA 0 , 0 , 127 , 128 , 3 , 254 , 0 , 0
DATA 0 , 0 , 120 , 128 , 3 , 254 , 127 , 128
DATA 3 , 254 , 64 , 0 , 0 , 2 , 64 , 0
DATA 0 , 2 , 64 , 0 , 0 , 2 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 64 , 0
DATA 0 , 0 , 64 , 127 , 252 , 0 , 64 , 127
DATA 252 , 0 , 64 , 127 , 252 , 0 , 127 , 255
DATA 252 , 0 , 127 , 255 , 255 , 254 , 0 , 127
DATA 252 , 0 , 120 , 255 , 255 , 254 , 127 , 255
DATA 255 , 254 , 64 , 0 , 0 , 2 , 64 , 0
DATA 0 , 2 , 64 , 0 , 0 , 2 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
```

```
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , -1
' nshipl data
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 2 , 0 , 0 , 0 , 16
DATA 0 , 0 , 0 , 20 , 0 , 25 , 0 , 3
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 15 , 252 , 31 , 254 , 63 , 255
DATA 127 , 255 , 0 , 0 , 0 , 0 , 28 , 14
DATA 8 , 4 , 28 , 14 , 8 , 10 , 16 , 1
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 192 , 0 , 192 , 1 , 224 , 3 , 240
DATA 7 , 248 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 62 , 31 , 28 , 14 , 28 , 14
DATA 8 , 4 , 28 , 14 , 8 , 10 , 16 , 1
DATA 0 , 0 , 15 , 255 , 11 , 134 , 15 , 48
DATA -1
' BULLET DATA
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 2 , 0 , 0 , 0 , 16
DATA 0 , 0 , 0 , 17 , 0 , 25 , 0 , 3
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 128 , 0 , 192
DATA 0 , 192 , 0 , 192 , 0 , 192 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 128 , 0 , 64 , 0 , 128 , 0 , 64
DATA 0 , 192 , 0 , 192 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 0 , 0 , 15 , 255
DATA 0 , 0 , 15 , 48 , -1
' HITTER DATA
DATA 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
DATA 0 , 0 , 0 , 2 , 0 , 0 , 0 , 16
DATA 0 , 0 , 0 , 12 , 0 , 25 , 0 , 3
DATA 0 , 0 , 0 , 0 , 34 , 0 , 54 , 0
DATA 26 , 0 , 54 , 0 , 46 , 0 , 20 , 0
DATA 20 , 0 , 28 , 0 , 8 , 0 , 0 , 0
DATA 0 , 0 , 0 , 0 , 34 , 0 , 34 , 0
DATA 54 , 0 , 58 , 0 , 22 , 0 , 12 , 0
DATA 28 , 0 , 20 , 0 , 8 , 0 , 12 , 0
DATA 0 , 0 , 15 , 255 , 0 , 0 , 15 , 48
DATA -1
```

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221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310

A. Please check whether you are...
1. ☐ male ☐ female

B. What is your age?
1. ☐ under 18 2. ☐ 18-24 3. ☐ 25-34
4. ☐ 35-44 5. ☐ 45-54 6. ☐ 55-64 7. ☐ 65+

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161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310

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1. ☐ elementary 2. ☐ high school
3. ☐ junior college 4. ☐ college graduate
5. ☐ master's degree 6. ☐ PhD

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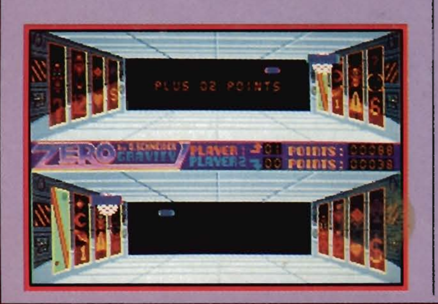
You're on a journey of discovery into the farthest reaches of the universe, charting new courses into the unknown.

The Treaty of Mongthlian, signed in 2110, ended intergalactic warfare and opened up space for trade and exploration.

One of the greatest problems with long voyages through space is dealing with boredom and lack of exercise. Even at light speed life in deep space can become boring and tedius.

The game **Zero Gravity,** similar to Volleyball, was devised to relieve boredom and provide much needed exercise. In **Zero Gravity**, one player is placed on each side of the cargo bay in the weightless environment of space. A red and white ball is volleyed using rectangular paddles. Goals are scored by hitting the ball past your opponent.

To add to the complexity, certain panels along the side can be struck with the ball to add or subtract points from your score at different times. Watch for the right moment to send a ball slamming against the side walls for a quick bonus point, and, hopefully, a wild, unplayable angle for your opponent.



Zero Gravity is joystick controlled by one player against a computer controlled opponent, or two players against each other, and it features three levels of difficulty.

The screen is divided to present the view point of each player. Player One uses the top half of the screen, while Player Two observes the action in the lower half of the screen.

Zero Gravity *is available for the C-64, Amiga, Atari ST, and (soon) the IBM PC*



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